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EVERY STEP IN BOTTLING HONEY—E. G. LeStourgeon

COMB OR EXTRACTED HONEY?—A Comparison.

THE RELATION OF FLOWER ODORS TO BEES—J. H. Lovell.

WISCONSIN'S FIRST HONEY WEEK—M. D. Fischer

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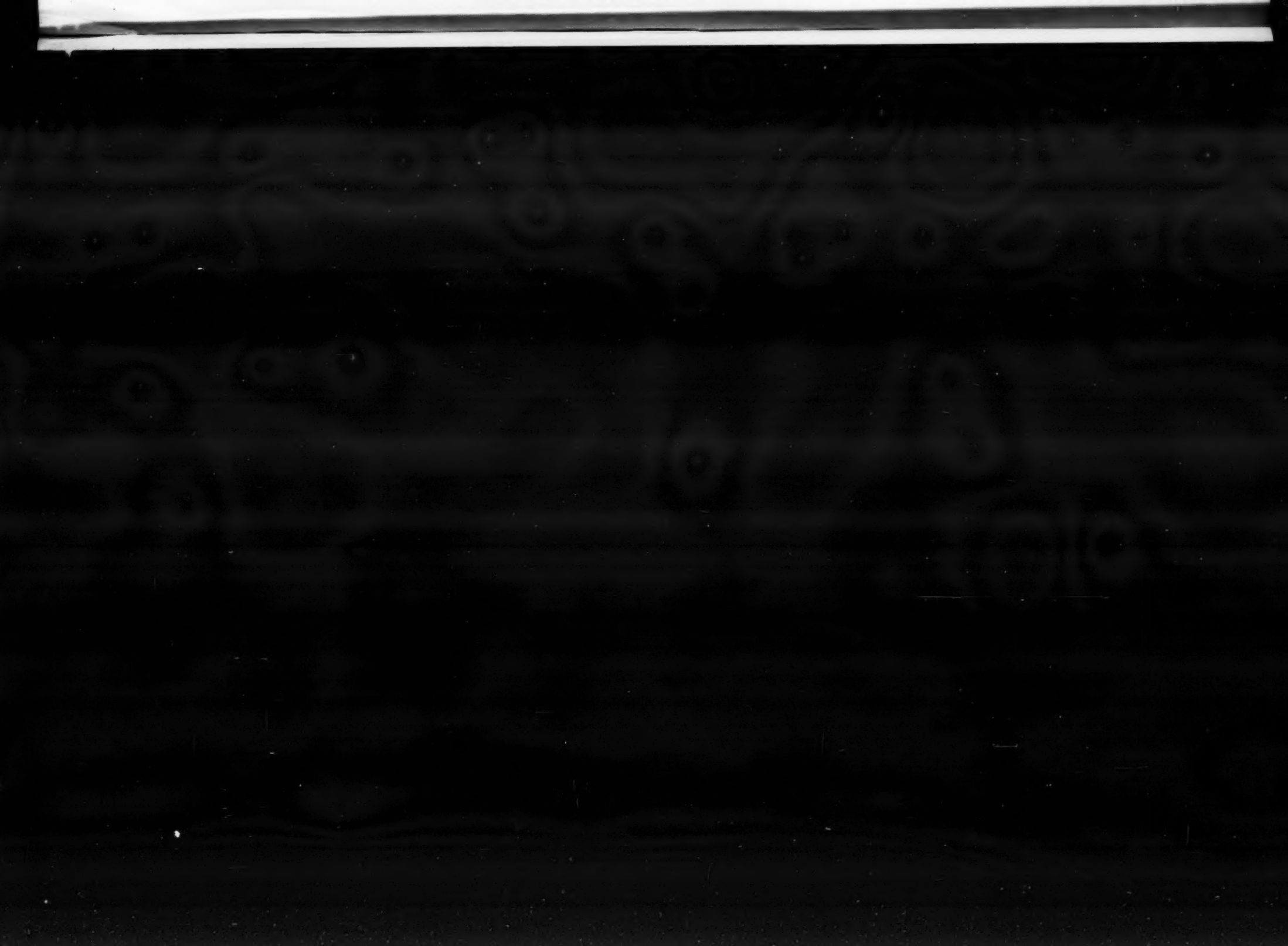

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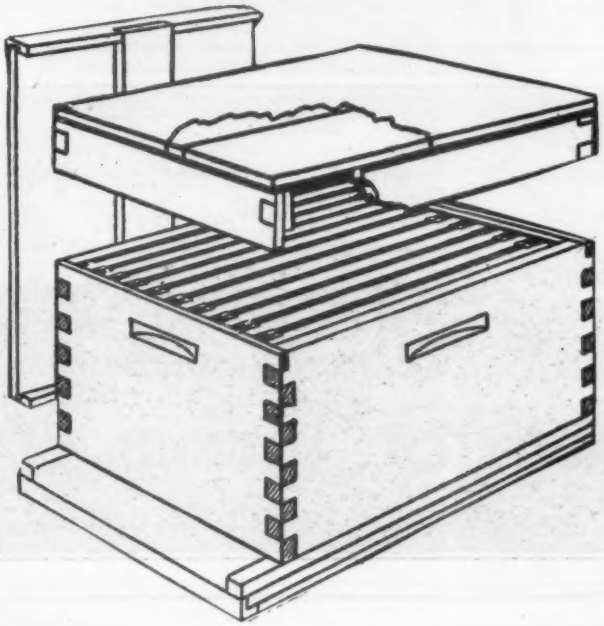

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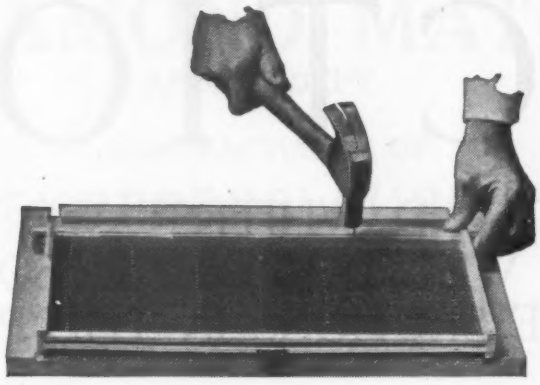

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Diamond Hives, etc., which are manufactured from Sugar Pine from our own forests present every desirable feature, and embody every improvement in design and betterment in construction. Diamond Hives have a reputation for high quality well nigh world-wide.

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ABOUT PUBLISHING COSTS

The following letter from the publisher of that delightful little magazine, "Guide to Nature," with reference to publishing costs, indicates that beekeepers are not alone in finding it difficult to market their product at a profit above the high cost of production. To nature lovers we would suggest that they write to Dr. Bigelow at Sound Beach, Conn., for a sample copy of his magazine, which is of interest to all who love the out-of-doors:

January 3, 1924.

My Dear Mr. Pellett:

I have read with much interest your "Lights and Shadows" on page 50 of your January number. Was noticing especially what you state about complaints. What astonishes me is that you are able to publish so big a magazine for only one dollar and fifty cents. I don't see how you do it. The cost of printing seems to me would be entirely prohibitive.

It happened that just after I read your January number and was considering this topic I picked up "The Literary Digest" of December 29 and was surprised to note that it was not larger than your magazine. The pages are practically the same size and there were only 52 pages.

Edward F. Bigelow.

SOME NOTES ON HONEY PLANTS FROM CLAYTON, IOWA.

By L. H. Pammel.

I happened to be in McGregor to attend the Wild Life School and so made a little trip to Clayton, some ten miles below McGregor, an old town nestled in a little valley. The west slope of the hills and the valleys leading to the Mississippi River are covered with deciduous trees; prominent among these are the basswood, sugar maple (Acer saccharum), some red oak, elm, ironwood, and, adjacent to the river in the bottoms, the soft maple, sandbar and almond-leaved willow. These bottom trees are abundant and furnish a good honey flow. The basswood and sugar maple, in their season, furnish a great deal of honey. I happened to see a good-sized apiary on the side of one of the hills, the hives placed on the terraces. I introduced myself to the beekeeper, who said his name was A. M. Adams. I found Mr. and Mrs. Adams intelligent, wide-awake beekeepers. They had made a great many observations on honey plants. Here was an opportunity to study honey plants next to the apiary. First, I noted the white sweet clover and the yellow, both visited by honey bees. Bees were abundant on catnip and a few on motherwort. I noticed a half dozen on the burdock at one time, and every plant I saw was visited. I observed bees gathering pollen from hemp (**Cannabis sativa**) and common nettle (**Urtica gracilis**). These weeds

are common here. The virgin's bower **(Clematis virginiana)** was just in bloom. Mrs. Adams brought me a specimen of horse mint **(Monarda fistulosa)**, which she said was much frequented by bees. I was of the opinion that the honeybee could not get nectar out of the flower because the tube of the corolla is too long. I soon found on a clump in the neighborhood a half dozen bees. To satisfy ourselves, Mr. Adams killed a bee and we found a drop of honey. How did they get it out of the tube? Either the honey must reach up into the tube by capillarity or the bees get the nectar through a slit in the corolla. I will, however, state that the bees went into the flower the regular way.

Now this is to apologize to those beekeepers, especially Mr. Brown, of Sioux City, who have frequently told me that bees get nectar from this plant, as I have always maintained that they do not get nectar from it.

Mr. Adams told me that a species of rattlesnake plantain **(Cacalia atriplicifolia)** in the woods is a good honey plant. There are many species of aster in the upland woods, especially **Aster Drummondii, A. azureus, A. sagittifolius,** that furnish nectar. There are also some species in the bottoms, like **Aster Tradescanti** and **Aster novæ-angliæ,** also several goldenrods, and I should judge this a fine country for bees, where, in an ordinary season, bees should have a surplus. The present season has, however, been a little too dry.

Chip of the Old Block

Melvin Pellett, son of the associate editor, is taking a course in beekeeping under Paddock and Jesup at the Iowa College of Agriculture. While following in the footsteps of his dad, he is making his start in quite a different manner. In the old days the would-be beekeeper bought some bees and a book and subscribed to a bee magazine and plunged in.

The colleges give the boys of the present day a big boost in starting them in the right direction.

Taxation of Bees

There are no figures which are reasonably accurate concerning the number of hives of bees in the United States. The census figures include only bees on farms, and hence are far from complete. In many states the assessors do not take the bees for taxation, and where they do it is probable that but a small part of the bees actually present are included. Through the kindness of Dr. Burt Osburn, of Phoenix, we have been supplied with a table showing the taxable property in the state of Arizona. The total number of hives of bees shown is 19,964 for the entire state, valued at $63,599.00. It would be interesting to know what part of the Arizona bees are included.

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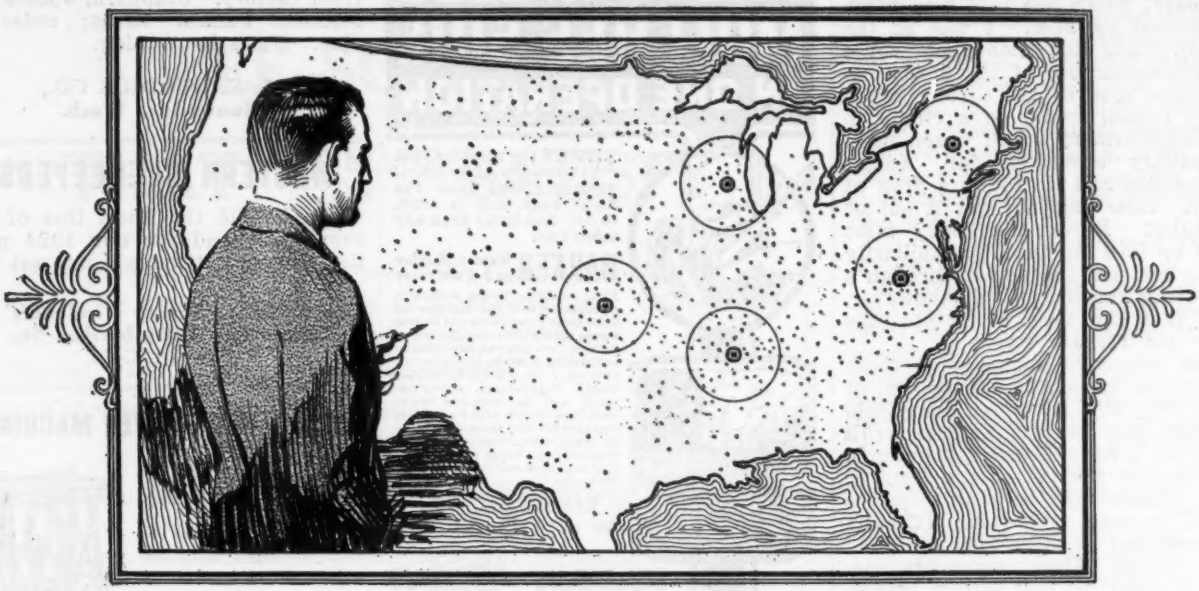

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With all possible preparations, it will not be humanly possible to give you immediate service on all items in the busy season, when the heavy honey flow is on. Be above the average—look ahead—list your requirements now and place at least part of your order at once. Plan to have on hand enough supers, for instance, to harvest the honey when it comes. Write us for address of nearest Lewis branch or dealer who can serve you most quickly and at least parcel post cost. Help us to help you by doing this now.

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AMERICAN BEE JOURNAL

VOL. LXIV—NO. 2 HAMILTON, ILL., FEBRUARY 1924 MONTHLY $1.50 A YEAR

EVERY STEP IN BOTTLING HONEY

By E. G. LeStourgeon.

On page 548 of the American Bee Journal for November we discussed the density of honey and the proper manner in which it should be liquefied for bottling. I refer to that article now because I desire to emphasize again two outstanding facts. First, honey must be heated very slowly and very carefully, at comparatively low temperatures, if it is hoped to retain its delicate flavor and aroma. Second, honey intended for bottling must be dense or "heavy bodied" honey, reading 42 degrees Baume, if possible, and weighing not less than twelve pounds to the gallon, avoirdupois, at temperatures of 70 degrees Fahr., or less. The incidence of these two stubborn facts becomes the gravest problem of the honey packer. Unfortunately, the American public have not been educated to realize that when honey is granulated it is in its best and most wholesome condition. We all know the delicate aroma of freshly extracted honey, and the delicious flavor of this "virgin honey" when the first fruits of our harvest come to the table. We realize, as we prepare our honey for market, that we are deliberately dissipating some of this wonderful bouquet, because every time we heat the honey or liquefy it, if granulated, we send off into the air a portion of the delicate essential oils that made this aroma and flavor possible. If the consumers knew what we know about honey they would demand granulated honey and would insist that it be honey that never had been heated. But they do not know it and, instead, they demand that the honey come to them in liquid form.

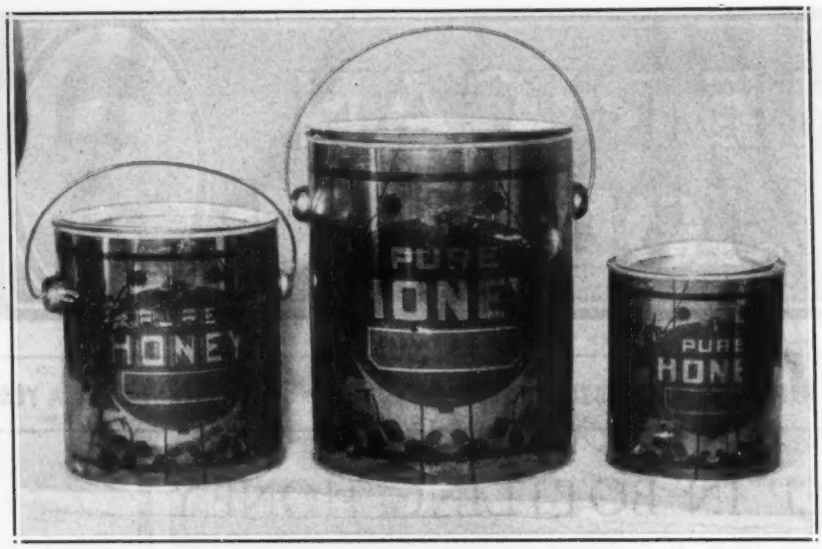
Two primary facts, then, come home to us. We must heat our honey in a manner that will, as nearly as may be, retard subsequent granulation, and yet retain as much of the original aroma as possible. We could, if we would, heat or boil the honey until it positively would never granulate again, but then it would no longer be honey. So, again, we must emphasize the first fact that whenever for any reason we heat our honey at all it must be at as low a temperature as possible and the heat must be applied very slowly, and then never directly to the honey itself. This brings me to our second fact, namely, that only the denser honeys may be used successfully in bottling. I repeat again, because it is contrary to the popular belief even among beekeepers, that **the denser the honey the less likely it will be to granulate.** One can, therefore, hope to retain more of the delicious flavor and pleasing aroma of virgin honey by choosing, for bottling purposes, only the very densest honey and by exercising extreme care in heating it preparatory to bottling.

MUCH depends upon the package in which food products are offered. In this article Mr. LeStourgeon tells our readers how to make the most of their market opportunities. In his long experience in selling large quantities of honey to the trade he has learned much concerning market demands which will be of value to our readers.

People will not buy what looks like lard in glass jars.

Something besides density must also be taken into consideration in selecting honey to be packed in glass. It must be light in color. No matter how heavy bodied or how pleasant a flavor the honey may have, if it is dark in color it cannot find a ready market in a transparent package. There is an exception in very limited areas, where certain dark colored honey, such as buckwheat, may have a limited and strictly local vogue. For the trade generally, however, a light color is demanded. So universal is this that beekeepers have come to know certain kinds of honey, such as sweet clover or sage, for instance, as "bottling grades."

Let us go back, just a moment, to the subject of granulation to observe that where honey is packed in tin the problem of the packer is somewhat simplified. Honey can be successfully, and often is, packed in tin, when cold, and direct from the extractor or original settling tank. In fact this is really the best way to pack honey when it is to be sold in five, ten or sixty-pound cans. By this means all the delicate flavors of the virgin honey is retained. The label may, and in fact should, have printed on it a few simple directions for liquefication and a warning against overheating. As a general observation, I will say, with all the emphasis that I can command, that **it is always far better, wherever possible, to market honey in tin.** The



The best way to sell granulated honey is in tin pails.

honey is better; the individual sale is larger; and the price per pound, to the consumer, is less. But, alas, we cannot induce everyone to buy honey in this sized package and the small glass container is necessary. In these days of delicatessen stores and apartment houses our industrial population buys in very small packages and, as the saying is, "lives out of a tin can." The price range of a family for any given purchase of a commodity is from 10 to 50 cents, and honey must be offered in a package that can be retailed within this range or be shut off from this large percentage of the consuming population. Besides this important consideration, there is another, which is that the sale of a small package of honey cultivates a taste for more and, by advertising honey, often leads to the sale of the larger packages.

You may wonder why it is that I say that honey in tin may be safely packed without heating and that granulation does not enter as so grave a problem, and yet at the same time insist that honey in glass must be packed to retard granulation. The reason was well stated by a well-known and successful packer when he said, "The customer will buy granulated honey in a tin pail, but he will not buy what **looks like lard** in a glass bottle." The shelves of the grocer and the delicatessen dealer shine and sparkle with pretty labels and attractive packages. To compete in such company, our honey must have on her very best dress and must smile and sparkle in crytal loveliness. No drab clothes can she wear here, nor may she permit herself to frown with streaks of granulation furrowing her countenance.

We have now these facts: Our honey, ready to be dressed and presented to the trade in glistening bottles, must be the densest and most heavily bodied we can find; it must be of light color, the whiter the better; and it must have been heated slowly and carefully, at as low a temperature as possible. (We set our thermostat at 147 degrees Fahr., as maximum.)

Now we must choose our bottle. We find that clear flint, straight-sided jars with wide openings, and holding accurate weights as to fractions of a pound, are preferred by the trade, and we use such jars holding 8 ounces, 16 ounces, 24 ounces, 32 ounces, and 40 ounces, respectively. Honey is one-third more dense (greater in specific gravity) than water. A jar listed by the manufacturer as holding 6 fluid ounces will therefore hold 8 ounces of honey, and a 12-ounce (fluid ounces) jar will hold 16 ounces of honey, of bottling grade. What a honey man calls, therefore, a half-pound jar is really a 6-ounce jar in commercial parlance. It is well to remember this when ordering your glass from other than bee supply houses. A bee supply house will advertise for sale an 8-ounce jar, meaning a jar to hold 8 ounces of honey, whereas, should an 8-ounce jar be ordered from, say, a druggist supply house or a manufacturer, he would likely send you a jar that would hold nearly eleven ounces of honey.

To present a table that may prove valuable to some in ordering their glass jars, I will give the sizes we use and have found most acceptable to the trade:

The standard 6-ounce jar, holding 8 ounces of honey.

The standard 12-ounce jar, holding 16 ounces of honey.

The standard 18-ounce jar, holding 24 ounces of honey.

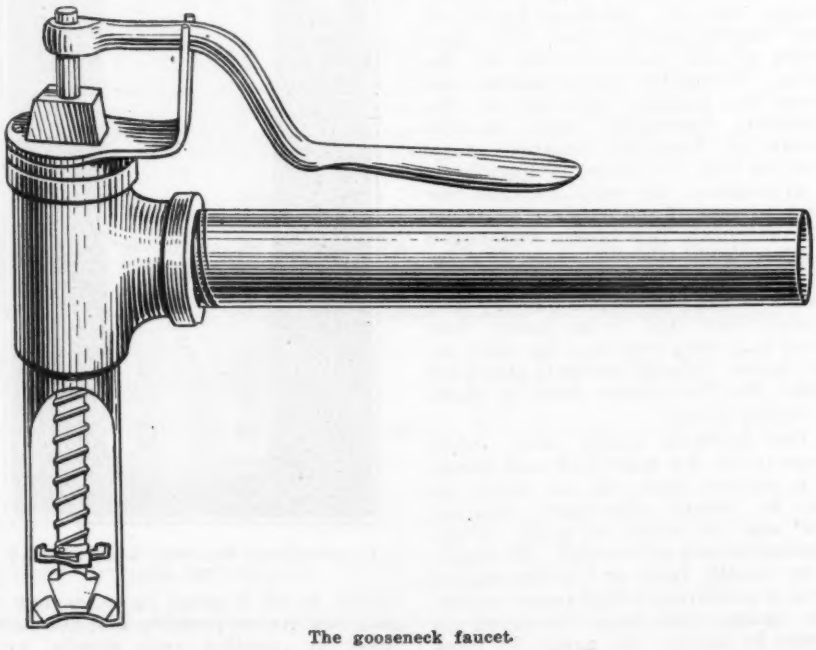
The standard 24-ounce jar, holding 32 ounces of honey.

The standard 30-ounce jar, holding 40 ounces of honey.

We have found the No. 30 jar, holding 2½ pounds, or 40 ounces, of honey to be the largest sized glass package in which it is convenient or desirable to pack honey.

Let us be scrupulously clean. We will scald out and polish these jars until they shine and are worthy of holding our product. Have you had any experience in filling jars of honey? Do you remember that a scum or froth of minute bubbles was raised on most of them and made the finished product unsightly?

We must obviate this. It can be done easily. The honey must be hot, when we bottle it, because that will permit us to retard granulation and will make it flow freely so that we may work more rapidly. The fact of the honey being hot and that it flows with some force, gathering bubbles in its fall, was what caused that scum to rise. To correct this we must use a nozzle or faucet that will not permit the honey to fall through the air. Right here is one of the chief kinks or tricks in this business.



The gooseneck faucet.

The old way—the way you did it when you got that scum of froth on your honey—was to have a fixed faucet at the bottom of your honey tank or vat, and the bottles or jars were held under this spout, filled, and then passed on. The new way, and the right way, is to have your bottles stationary in long rows or in groups of a dozen or so, and your faucet, a goose-necked affair with a snout at right angles, on the end of a flexible hose.

The illustration of a goose-neck faucet shows the details of its construction. I shall attempt to describe it. They are very simple in construction and the one we use was made by an auto mechanic in a small-town garage. A common iron gaspipe T and two short lengths of one-inch pipe, or even two long one-inch nipples, can be used. One of these forms the snout of the goose neck and the other, placed at right angles to the first, is connected to the hose or flexible pipe, which is in turn fastened to the vent from your blending tank or honey vat. The snout must be long enough to reach the bottom of the deepest jar which you expect to use. Its bottom opening is closed with a poppet valve, and the seat, at the bottom, must be soldered in. The valve should be ground to make a snug fit. The top opening of the T should have a stuffing-box through which the valve stem passes. The valve is worked by a lever which projects backward parallel with the pipe and controlled by the hand of the operator as he grasps the hose.

We will now begin to fill our jars. Remember that they are stationary, and standing on a low table or in trays, or even in packing cases. The snout of the gooseneck is inserted to the bottom of the first bottle or jar and we release the valve by pressure upon the lever. We begin to fill at the bottom of the jar and raise the gooseneck as the honey flows in so that the stream is never more than a half inch from the level of honey as the jar fills. Releasing the pressure on the lever, instantly stops the flow, and, the hose being flexible, we insert the snout in the next jar, and so on as rapidly as we wish. Because the honey has not been permitted to fall through the air, there are no bubbles to form a scum. The honey is as clear and sparkling at the top of the jar as it is at the bottom. This is one of the simplest and most important of the steps in bottling our honey.

Seal while hot. As soon as the operator of the gooseneck has filled the jars, and he can do it very rapidly, have another putting the seals or caps on the jars. We want our honey to stay liquid as long as possible. Two things will help: First, seal while hot; and second, **seal.** I mean use an airtight seal, if possible. The nearer you can absolutely hermetically seal the jar, the more secure you may feel that your honey will not soon granulate. Screw-caps that are lined are very good and may be made almost airtight, but where a great quantity of honey is to be bottled it is better to have some type of special closure and a machine to do the sealing.

Our honey is now properly heated and bottled and must be labeled and marketed. Since my next article in this series will have to do with advertising and marketing, and since the label is the first step in advertising, I shall leave our honey unlabeled for the moment and repeat some of the things our experience and the experience of others have taught us.

1. Only dense honey of light color should be bottled.
2. It should be heated as little and as few times as possible.
3. It should never be made very hot. (We personally recommend 147 degrees Fahr. as the maximum.)
4. The jars must be of clear flint, and straight-side jars with a wide mouth are preferred.
5. The jars should hold exactly the multiples of a half pound avoirdupois.
6. A jar of honey will weigh net one-third more than the listed fluid ounce capacity of a commercial jar.
7. We must clean our jars by scalding or with live steam.
8. Use a gooseneck faucet which reaches to the bottom of the jar to prevent frothing.
9. Pack and seal the honey while hot.
10. Make the closure airtight, if possible.

These are the ten steps necessary in the bottling of honey. They may not be literally "every step," but they are the ones that are most vital, and, if they are observed, success will surely crown your efforts. Perhaps you will not have absolutely solved the problem of granulation. I told you in November that that problem has never yet been solved. But you have retarded granulation, and in doing so have not totally destroyed the delicate flavor and aroma which makes honey to be really honey and gives it place in the subconscious mind of every human being as the embodiment of all that is sweet and clean and good and wholesome.

E. G. LeStourgeon.

San Antonio, Texas.

Honey and Water as an Anti-freezing Solution for Automobiles

The very common alcohol anti-freezing solution has two disadvantages which, if possible it would be desirable to overcome. These are its low boiling point and its rapid evaporation, making the freezing point of this solution in practice a somewhat uncertain quantity requiring frequent test.

The honey-water solution gives evidence of overcoming these disadvantages. The boiling point of a fifty-fifty solution is slightly above that of water, and when this mixture boils only the water is given off, so that once the radiator is filled all that it is necessary to add, thereafter, provided there is no leak, is water.

Preliminary tests of the honey-water solution have been made at the New York State College of Agriculture and indicate the following:

The proposed mixture is one part extracted honey to one part of water, by volume.

Extracted honey weighs three pounds to the quart.

The mixture should be boiled in an open vessel to bring all froth and scum to the top, thus cleansing the solution.

A space of one inch should be allowed above the solution in the radiator to allow for expansion.

All gaskets must be tight.

If the solution gets low, add water while the car is in use.

At the freezing temperature, this fifty-fifty honey-water solution flows freely, while a soft, mushy ice is forming. Below this temperature the mush ice thickens so that it will not flow by gravity, although it may be stirred. This mixture expands with heat and contracts with cold. It may be subjected to any temperature below zero without bursting the water jacket. It will not even burst the thinnest glass test tube.

This solution has been used in various parts of the United States for several years. The results of our experiments and the reports of the use of this solution in automobiles show that it is a practical anti-freezing solution and worthy of further investigation.

R. B. Wilson,
F. L. Fairbanks,
New York State College of Agriculture.

To Study Marketing

Sears, Roebuck & Co., of Chicago, have established a foundation to study the problems of the farmer in marketing his crops. A careful study will be made of the cost of production and distribution in an effort to help the farmer to overcome the handicaps of a too expensive marketing system. We hope they will learn something which will be helpful to all lines of agricultural production, including beekeeping.

Seasonable Hints.

The Dominion Experimental Farms of Canada issue a pleasing little bulletin for the benefit of the farmers which gives suggestions as to what can most profitably be done at a particular season of the year. It includes the various farm activities, and bees are not overlooked. C. B. Gooderham, the Dominion Apiarist, gives briefly and quite to the point the things which the beekeeper should by no means overlook.

Prices Vary Too Much

There is a variation of from 10 cents per pound retail for dark honey to 40 cents per pound for light honey here. Bees did not produce any surplus in this locality, but went into winter quarters in fair shape. We have had plenty of rain to put honey plants in good shape for coming season. T. F. Pomeray, Indiana.

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THE EDITOR'S VIEWPOINTS

DEATH OF A NOTED ITALIAN APIARIST

L'Apicoltura Italiana, in its October number, announces the death of Dr. Cesare Colantoni, who for a number of years edited the above named magazine, and whose death is mentioned by the editor, Dr. Cotini, as to be deplored by beekeepers, as much as that of our countryman, A. I. Root.

Dr. Colantoni was 75 years old. He was a progressive beekeeper who had adopted the American system and taught it. We visited him with a crowd of beekeepers, at his country home, during our stay at Ancona, in 1913, and an account of this visit is mentioned on page 122 of April, 1915, of the American Bee Journal. At the time of his death, he was no longer editor of the magazine above mentioned, but was still vice-president of the "Federazione Apistica Italiana," which our readers will remember as one of the most successful honey producers' associations in the world. Dr. Colantoni was an exceedingly affable and pleasant man, whose name will remain bright among his friends.

THE TALK (DIE SPRACHE) OF BEES

We call attention to Mr. Lovell's article on "Odors of Flowers and Communication Among Bees," in this number, written with his usual care and quoting v. Frisch's experiments. Any experienced beekeeper who has seen how quickly the discovery of honey, available to robbers, is made, after one or two bees have begun the robbing, will appreciate the value of the statements just made. If there is no honey to be had in the field and you notice, all at once, bees flying wildly about the apiary and the honey house, you may be sure that one or two bees have discovered honey, ill-guarded, and have informed their sisters. But as they cannot give the location, their speech not being sufficiently explicit, hundreds begin the search and succeed in finding the source of the excitement.

ARE DRONES A HELP TO PRODUCTION?

A reader, from Wisconsin, wishes to know how the editor stands on the question of drones and honey production, as mentioned by Professor Alfonsus on page 25 of the January number, where Dr. Zander is reported as stating that "drone stocks, as well as producing drones for the whole apiary, gave the highest honey yield."

To my mind, it is as reasonable to state that those colonies gave the highest yield, **because** they produced drones, as to state that a man who appears with a dress suit and a silk hat is wealthy **because** of that dress suit and that silk hat. In other words, the colony is not wealthy because it has drones, but it is wealthy because it has a prolific queen, **in spite of having a large number of drones.**

Drones are heavy consumers and absolutely incapable of producing a drop of honey. Granting that their presence may incite the bees to greater energy, which is at least doubtful, it is absolutely unnecessary to have as great a number as a prolific queen is able to produce in a strong colony. Not less than one-tenth of the comb surface, in a naturally built colony, is of drone cells. So it is not at all difficult to secure some 3,000 or 4,000 drones, if the queen is prolific.

Drones are reared usually last; that is, a queen prefers to lay eggs in worker cells, until she becomes tired of the pressure of the spermatheca, which fertilizes the eggs as they are laid; then she looks for drone cells and lays in them. A very prolific queen usually raises a very large force of workers before she lays any drone eggs; but when she does, she lays a great many, promptly, if she finds the cells.

A queen of inferior laying ability will not fill the worker cells so readily, so she is a little later in laying drone eggs; but as her colony is not so strong as that of the prolific queen, the production of honey is also less. An old queen which has about lost her fertility will lay a large proportion of drone eggs, yet no one claims that her colony will produce much.

I hold, and I have proved to my satisfaction, that a colony which has a very prolific queen secures more surplus when it is deprived, as much as possible, of its drone combs, than when the queen is allowed to lay as many drone eggs as she would choose.

On this question I have withstood more opposition than on any other. The old "skep" beekeeper notices that the strongest colonies, those that produce the largest number of bees, workers and drones, produce the most honey. Then he concludes that drones are in no way a hindrance. Yet, if he had two colonies of equal strength, the one with 3,000 to 4,000 drones and the other with 200 to 300 drones, he would find out, as I did, that the drones are expensive to produce and expensive to maintain. Yet, we need some drones and must have some in some of our strongest colonies. But I cannot agree with the man who tries to avoid the work of lessening the amount of drone comb by claiming that that drone comb, and the drones raised in it, will be beneficial to the colony. We rarely raise less than 200 to 400 drones in a colony, no matter how careful we are to do away with the drone combs, because there are always little corners where these large cells are built, and the queen seeks for them.

But we might as well say that a home will thrive just as well if the husband is idle, because the wife will work just that much harder, as to say that a hive containing a large number of those idle, noisy fellows will produce as much honey.

However, let it be fully understood that I approve unreservedly of the suggestion made that we must produce drones from some of our best colonies, if we wish to improve the race, for, as Professor Alfonsus puts it: "This is clearly as important as is the careful selective breeding of queens."

I also agree fully with the statement made, that Vogel ascertained "that the drones transmit the tendency to sting." I would word it a little differently and say that the drones transmit the temper or the gentleness. My experience upon this score dates back to my young days, some 54 years ago, when my father used to send me among the neighbor beekeepers to Italianize their bees. I noticed, without being able to explain why, that the colonies of bees of black stock, whose queens had mated with one of our Italian drones, were as gentle as our pure Italians, while our own hybrids, from an Italian queen mated with a black drone, were of the most violent temper. It was only when I attended the Paris International Congress, in 1900, that an old French priest made the statement to me that the drones supplied the disposition to anger or gentleness, in the progeny. This explained the fact which I had noticed and confirms Vogel's assertion.

MISTAKES ABOUT HONEY

In the British Bee Journal, December 6, page 500: "Quite recently a young couple called for tea. Honey was placed on the table in a jar designed for the purpose, and a non-slipping honey spoon provided; neither of the two had ever tasted honey before. The young lady quite innocently asked if it was to be taken on the bread

and butter similar to jam. Having myself been used to it from childhood I wondered for the moment what alternative method there possibly could have been, but it was quite all right. After tasting, they were both very 'Oliver Twistified.'

"A traveller from the city recently called, and, on seeing a display of honey for sale in my cottage window, said, 'Hello! I see you've started making honey now.' My wife explained that honey was the work of the bees, gathered from the flowers during the summer sunshine, and not an article manufactured by man. 'Oh!' said he, with surprise. 'Bees! And do they really put it in those jars?'

"My wife showed him an extracted shallow comb (Yes, we have no—sections) and explained how the bees stored it, and how we extracted and bottled it.

" 'Oh!' he said, 'and is that' (the comb) 'a sponge?'

"She had quite a job to convince him that it wasn't, until he touched it, and then he went off quite happy in the knowledge that the world was getting wiser every day (his own words). Some people who sell honey in shops seem to be very little wiser. I purchased a jar last spring, and the man behind the counter said that he could recommend it, as it was made by a celebrated firm of jam manufacturers. I left him alone in his glory, and thought a little."—W. Shuker, Hale.

Really, is that any worse than what some of the American consumers ask about honey? Did you ever hear someone ask: What is **extract of honey**? He or she has heard the words **"extracted honey,"** but misunderstood them. They have a very faint idea that it is something very sweet, like corn syrup.

Let us strive to educate the consumers, if we want to do more business in honey. Let us teach them what extracted honey is and how it is taken. It is now 55 years since America has begun to use the honey extractor. It is time for the bright American to learn what it is.

WATER CARRIERS

Some of the experiments by our new Illinois man, Wallace Park, are exceedingly interesting. Mr. Park marked some bees that went after water and other bees that went to the blossoms. He shows that water carriers are rarely more than 6 minutes away, some coming home with their load within three minutes, when the water is handy. So, if your bees are slow in gathering honey, it is not their fault, but the fact that the blossoms do not yield the nectar fast enough. That is why such tremendous crops are harvested in years of heavy flow.

HONEY WEEK AND LABELS

The article in this number, page 72, by Miss Malitta D. Fischer, will interest our readers. But they would be still more interested if they personally knew the lady who wrote it and realized what a delightful booster she is for all things pertaining to beekeeping.

However, we must offer a criticism to our Wisconsin friends, and it is concerning their official label, whether paper or lacquer. Look at the picture on page 72, then look at the one on page 71 and also the one on page 73. Both the first and the last give you the word "honey" in a flash, at the first glance, while with the one on page 72 you need to pay attention and will not catch the word "honey" readily. Now, when a consumer goes in any retail store to buy something, he or she does not usually go in with the intention of buying honey. But if the word HONEY strikes his eye, at the first glance, there is some probability of their enquiring about it, and a sale is possible.

For that reason, we suggest that this word "HONEY" should be deprived of any adornment and made just as conspicuous, as **flashing** as possible, in a label, or any advertisement. We have applied this method for many years, with good results.

WINTER FLIGHTS

It is hardly necessary to urge the advisability, on old, practical beekeepers, of winter flights for bees. There are northern states where a winter flight is impossible, because the temperature is not warm enough for four or five months together for a winter flight. In those countries, cellar wintering is certainly advisable. But in the Middle States, especially when the bees are not packed in thick wintering cases, there are many days when winter flights are possible and beneficial. This is true, especially, when the quality of the honey is below normal, when there is honeydew or fruit juice in the combs. Usually the beekeeper makes efforts to remove this unhealthy food, but does not always succeed in getting it all out of the brood chamber. If he has fed the bees enough good honey or good sugar syrup, it is probable that the bees will not suffer. In any case, a winter flight, every few weeks, is advisable, if the temperature is not too low and if the sun shines without strong breezes. We have often heard beekeepers deplore the fact that their bees took a flight on a fairly warm day in snow time and that a number of bees were lost on the snow. There is a method to prevent most of the losses. It is to scatter ashes or straw or sawdust in front of the hives. But even if a few bees are lost out of strong hives, it is better for the colony that the bees had a flight, provided the greater number were able to return. The writer has often noticed that the colonies that lost the greatest number of bees on the snow, during a warm winter day, were the ones that wintered the best. This is due to the fact that many bees discharged the excrements accumulated in their abdomens during the cold days and could stand another serious spell of cold weather better than the bees that did not get a flight, all other things being equal. When a warm day comes, we want our bees to have a flight, and for that reason prefer to have the colonies facing the sun, for winter.

In the cellar, bees do not consume much honey and can stand several months without a flight.

POLISH BEEKEEPERS

The editor acknowledges the receipt of a big, silvery badge, representing a worker-bee, as honorary member of the Union of Polish Beekeepers' Associations, with headquarters at Lwow. Now, reader, if you wish to know where that city is located, hunt for Lemberg, for that is the name of Lwow in western parlance.

Those differences in language should be abolished, in this day of automobiles, aeroplanes and radio. There would be nothing astonishing nowadays to hear, in America, a concert at Lwow, and we should be able to recognize that name as well as many others, strange to us this day. We are beginning to realize that those countries are progressive, as well as we are, since we see them organizing even in our little industry of honey production.

Lemberg used to be held down under the Hapsburgs, who ruled Austria with an iron hand. It now belongs to the Polish free nation.

HOPKINS RETIRES

The November number of the New Zealand Fruit Grower and Apiarist announces that with that issue Isaac Hopkins retires from the editorship of the apiary department. He has been active in editorial work for 38 years, and during that time his name has become well known throughout the beekeeping world. To those of us who have come to look upon Isaac Hopkins as a friend, having followed his career through the years, even though we do not know him personally, there is a feeling of regret at his retirement. We extend our best wishes to our friend across the seas and hope that he may live to enjoy many years of comfort and health and that his declining years may be filled with enjoyment of the fruit of his long labors in behalf of better beekeeping on the other side of the world. F. C. P.

COMB OR EXTRACTED HONEY

Comparison of the Cost of Production and Market Advantages Under Various Conditions

THROUGH various marketing agencies word has come to the American Bee Journal to the effect that there is a constant decline in production of comb honey and a corresponding increase in extracted honey. From the same sources we learn that there is a certain definite demand for comb honey which refuses to take extracted honey instead. How much loss may come to the industry through failure to provide for this demand in future is a matter of speculation. Perhaps the greater number of consumers can be educated to take extracted honey as time passes.

During recent months there has been a very short crop of honey over a large territory without a corresponding increase in price. A little investigation reveals the fact that other sweets are replacing honey to a large extent and that many who formerly used the beekeeper's product are now satisfied with something else. Honey is not a staple product and it requires constant effort, on the part of the beekeeper before the public, to stimulate the demand.

In an effort to get the viewpoint of representative beekeepers, we have asked a number of well-known honey producers to answer the following questions:

1. How does the cost of production of comb honey compare with the production of extracted honey under your conditions? By this we mean how much more does it cost per pound to produce comb honey than extracted?
2. What is the relative cost of supplies for comb honey compared with extracted?
3. What is the comparative labor cost in the production of comb and extracted honey?
4. How many colonies run for comb honey production can one man care for without assistance?
5. Can a family be properly supported on the income from the colonies of bees that one man can care for without assistance when run for comb honey?
6. Can you suggest anything which might be done to improve the conditions of the comb honey producer and to serve to attract more men to specialize in comb honey production and to hold those who are already good comb honey men?
7. In your opinion what percentage of the demand for comb honey can equally well be filled with extracted honey without net loss to the industry through the change?
8. What is your opinion of the prospect for the future of comb honey production in case present conditions continue?

Following are the answers of four men to these questions. We expect to print more next month. Perhaps you may not agree with their views, but at any rate the subject is worth thinking about. Whether to produce comb or extracted honey is a matter for each beekeeper to decide for himself, but a suitable division of the total product is of vital interest to everybody, since it has a very important influence in the market.

SHOULD WE PRODUCE COMB OR EXTRACTED HONEY?

By an Idaho Beekeeper.

In answering your questions there are so many angles to be considered that I am going to write at some length on several of them. I am speaking only from my own experience and what I have gleaned from talking with other and more successful comb honey men. While some of the statements may sound rather egotistical they are the result of conclusions that I have reached from 25 years of experience in Wisconsin, Colorado and Idaho. But at that I may be far from the truth, and stand ready to be corrected if I am following false gods.

Answers

No. 1. There are a number of things to be considered in comparing the cost of producing comb honey with extracted honey. First is the man himself. In my humble opinion, though a man be a good extracted honey producer, he should not attempt to produce comb honey on a large scale, without at least one year's experience with a good comb honey man. If he does he is almost certain of disappointment.

Second, and I am inclined to believe, of as much or more importance than the man himself, is the outfit of hives, supers, etc. To produce a good article of comb honey, at a profit at the present time, requires an outfit that is as near perfect as machinery and a good mechanic can make it. The reasons why I make this statement are these: The bane of comb honey production is swarming. To combat this successfully requires an outfit that can be manipulated in the shortest possible time. Again, it may be necessary to move on short notice to take advantage of a good flow. This requires a uniform outfit if it is to be done at a minimum of expense and time.

This leads to the question of supplies. Whether rightly or not, most beekeepers think there is too large a margin between the cost of raw material and the finished hive. Anyone with fair mechanical ability can make $25 a day with a small saw table, cutting out hives. But a great many do not realize the necessity for exactness and the consequence is a lot of stuff that does not lend itself readily to the above mentioned uses.

They can, however, use it for extracted and get by fairly well. Another point is this: In the last few years there has been a great amount of agitation for large and larger hives. Personally I have never had experience with anything larger than 10-frame Langstroth, but I do not believe that comb honey can be successfully produced on a larger hive than that. (We have 1,000 colonies and they are all 8-frame). My reasons for this are these: In order to produce a nice article of comb honey it is necessary to crowd the colony, especially toward the close of the flow. When this is done the bees will crowd the brood nest as fast as the brood emerges, instead of crowding the sections. The ten-frame hive will have four frames of sealed honey where the eight has two. The more of these there are the harder it is to get the outside rows of sections finished.

The third important point to be considered in this question is the strain of bees. I have purchased hundreds of queens from John M. Davis, in the past ten years. I have culled and bred from the best honey gatherers and those that showed the least inclination to swarm. If it is possible to avoid it I never rear a queen from a cell that is built under the swarming impulse.

This year a prominent extracted honey producer who operates about the same number of colonies as myself was using three men beside himself to fight swarming, and his queens had the range of two ten-frame bodies, while I had one man, and all my bees were in eight-frame hives with comb honey supers. He could scarcely believe that there could be such a difference. I gave him the queen from a colony that had occupied the same hive for nine years without a queen cell except to supersede. I bought the original queen in 1914 and they superseded her in 1917 and again in 1920, and again this fall. Their average for the nine years was a little over 80 finished sections a year.

If that man were to attempt the production of comb honey with that strain of bees, plus the outfit of hives that he has, he would certainly meet with a lot of hard luck.

No. 2. The original cost of an outfit for comb or extracted is practically the same; but after the combs are once built, there is considerable difference.

We figure at the present time that the expense for the supplies to market 100 sections of honey is $3.25. Our sections, etc., are bought by the carload at jobbing prices and our cases are cut here. If the beekeeper pays retail prices for both sections and cases, he would have to add at least $1.50 to this. For extracted we figure about $1.25 for storing in 60-pound cans with case.

No. 3. For myself I can see little

difference in the comparative labor cost in the production of comb and extracted honey.

No. 4. From 350 to 500 colonies run for comb honey can be cared for by one man, depending largely on the season. If it be a bad year for swarming, the smaller number will keep a man busy, but in other years he can handle the larger number very well.

The past season I had a man with two years' experience and we ran 850 colonies with ease, but this was not a bad year for swarming. Next season we expect to tackle close to 1000 colonies. If they go too fast for us we will get a lad of sixteen or eighteen to wait on us in the yard. This adds a great deal to what the experienced man can accomplish in a day's work.

No. 5. Never having been married, I am not qualified to speak from experience, but I have several friends who are married and have supported their family on a one-man comb honey outfit. None of them, however, are disciples of Roosevelt.

No. 6. This is another question that covers a good deal of ground. In the past ten or fifteen years the Root company, through their journal, have, at different times, urged the production of more comb honey. The result has been that, if there was a large crop of honey throughout the country, a lot of poor comb honey was dumped on the market. This honey being produced by men who were not familiar with all angles of the game, was not a good article, and then it was poorly graded and this has a demoralizing effect on the market. The result for those of us who fight that end of the game from year to year was usually a balance on the wrong side of the ledger. In this connection there is a point, often overlooked in the discussions on this subject, that when there is an over-supply of comb honey it must be sold for what it will bring. Extracted may be carried over. The country as a whole rarely enjoys over two good crops in succession, so that an over-supply of extracted is not nearly so apt to be a loss as one of comb.

There are quite a number of men throughout the country who are equipped to produce both comb and extracted, and if the price fluctuates enough they will change with it to fill the demand. In our own correspondence now we are having more enquiries for extracted honey than for comb.

No. 7. I am not in a position to give an intelligent answer as to what percentage of the demand for comb honey can equally well be filled with extracted without net loss to the industry through the change.

No. 8. What is the prospect for the future comb honey production in case present conditions continue? It seems to me that if this question is left to the supply and demand it should be about as favorable for one as the other. My reason for sticking with comb honey is not that I think there is so much more to be made in that branch of the industry, but because I am equipped for the production of comb honey. At the present price of supplies (and I never expect to see them much cheaper) I would not live long enough to pay for an outfit of extracting supers with what difference there might be in price. I think this will apply equally to the extracted man changing to comb.

We are located a long way from the large centers of population in the East and there are many angles to the market and the demand that have escaped us.

ADVANTAGES OF COMB HONEY

By George S. Demuth.

I am convinced that under proper management as many sections of comb honey can be produced per colony as pounds of extracted honey. In fact, some seasons I have produced as many pounds of comb honey per colony in my comb honey yards as extracted honey per colony in one yard devoted to extracted honey.

The cost of the equipment for comb honey production does not differ materially from that for extracted honey production, except in the one case there is the additional first cost of the extracting outfit. For comb honey sections, foundation and shipping cases must be purchased every year instead of cans and cases. Anyone can figure these from the supply catalog.

In comb honey production, I have found it advantageous to visit each apiary about twice as often during the honey flow as is necessary for extracted honey production. These extra visits are largely for the purpose of stimulating the morale of the colonies to keep them up to a high pitch in their work. In the clover region this would mean from two to five more visits during a year to comb honey yards than to extracted honey yards.

The greater difference in labor comes about in preparing the product for market. This is where comb honey suffers greatly by comparison with that of extracted honey. We think we are doing well if one person scrapes, grades and packs thirty cases of comb honey in a day. It would not take long to run this much honey through an extractor.

As to the number of colonies one person can operate for comb honey production, with what is now known as to swarm control, I should put the figures at from 300 to 500 colonies, depending upon whether the apiaries are located where the beekeepers' work may be interfered by rain or in the arid region where he can work every day during the week.

Certainly a family can be properly supported on the income from the colonies one man can operate for comb honey, unless his ideas of proper living are on a higher plane than that of most of us.

Since most of those who gave up comb honey production to take up extracted honey production did so before the cause of swarming was definitely known, and before recent developments in swarm control, possibly the greatest factor that would attract beekeepers back to comb honey production would be a better understanding of the swarming problem.

In my opinion, the two kinds of honey are not competitive on the market to any great extent, but I am not able to give figures on this.

I think the industry has already lost a part of the market for comb honey. In the future comb honey will no doubt be produced only in those sections where it is more profitable, but the great bulk of honey will be produced in the extracted form.

Ohio.

ADVANTAGES OF EXTRACTED HONEY

By J. Skovbo.

Let me state at once that I have never been an extensive producer of comb honey, and along with most other producers in this locality I nearly discontinued it altogether during the war. I have always considered comb honey a mistake, believing that it has largely been responsible for the popular impression that honey is a luxury. The figures quoted in my replies are entirely guess work, as I have no records.

1. The cost of producing comb honey I find to be 100 per cent more than for producing extracted honey, caused largely by reduced crop and the waste caused by unfinished sections.

2. The relative cost of supplies, not considering the original investment in supers, etc., I think is 50 per cent more for comb honey, depending upon the percentage of culls.

3. Comparative labor cost 100 per cent more on comb honey.

4. We have no large comb honey producers here, but I would think that 150 to 200 colonies would be all that one man could properly care for.

5. Taking for granted that he was a comb honey man, and with average crop and market conditions, I think a family could be supported from this income, but the possibilities are much more limited than with extracted honey production.

6. I believe that the comb honey industry is doomed to decline. A temporary increase of production will only hasten the end by reducing the selling price; on the other hand, restricted production will enable the few who will specialize in comb honey to receive remunerative prices. A plainer shipping case than those commonly used would afford a small saving to the producer.

7. I am not acquainted with the extent of the present comb honey production, but I feel that 90 to 95 per cent of all honey produced had

better be extracted and chunk honey, with 5 to 10 per cent of comb honey, for the trade willing to pay fancy prices for it.

8. With increasing acreage of sweet clover and alfalfa, honey must become a staple at least as common as sirup and chocolate. Extracted honey, and in some localities chunk honey, can be produced at prices that will make this possible, but not so with comb honey. I believe the invention of section comb honey was a mistake; the idea is opposed to the natural inclination of the bees, and by reducing the crop 50 per cent, comb honey becomes a luxury either for the producer or for the consumer, or perhaps for both.

Oregon.

COMB HONEY VERSUS EXTRACTED HONEY

By E. S. Miller.

It would seem that there are two principal reasons why the production cost of comb honey is greater than that of extracted honey. One is the greater amount of labor involved and the other is that the average colony production of comb honey is considerably less. The fact that there is a more pronounced tendency toward swarming in the production of comb honey adds not only to the amount of labor required, but, also, swarming, or manipulation to prevent swarming, cuts down the total amount of honey stored. There may be some who will dispute this statement, but I believe that it is true for the average beekeeper. There is often a considerable loss of labor on account of unfinished sections.

I am not able to find any statistics regarding the average relative production between colonies run for comb and extracted honey. There is no doubt that in localities where there is a short, heavy flow, comb honey can be produced more advantageously than where a slow yield of nectar occurs, extending over a greater length of time. In this locality, probably not more than three-fourths as many pounds of comb as of extracted can be produced by the average colony.

A competent man with suitable equipment may be able to care properly for 300 comb honey colonies or 450 to 500 run for extracted honey. There are, however, very few who are really efficient in this kind of work. Probably the average beekeeper will be able to care for less than half this number if the work is done as it should be, or else care for them half as well as it should be done, with a consequent lessening of profits. Then, again, if foulbrood is prevalent the labor will be largely increased. If we assume, then, that a comb honey colony will, on the average, produce only three-fourths as much as an extracted honey colony, and that it will require one-half more labor, it would seem that the wholesale price of comb honey should be double that of extracted in order to afford the same amount of profit.

The fact that comb honey does not bring twice the price of extracted is, I believe, due principally to two reasons. The first is that farmer beekeepers and small producers usually are not equipped for extracted honey production, or if they have the necessary equipment for production, their product is not readily salable in the form in which it is put up. The small beekeeper, therefore, goes in for comb honey, which he can sell locally or otherwise at some price, rather than extracted which cannot be disposed of. As production costs usually are not counted, the price in most cases is whatever the dealer is pleased to offer. The second reason for low prices of comb honey is that there are some producers, in particularly favored localities, who ship to commission men and brokers, and their product is brought into competition with that of the farmer beekeepers, with the result that there is little or no profit to either producer. The average commercial apiarist cannot afford to produce comb honey in competition with these people.

We have no reliable statistics as to the average production, per colony, run for comb honey. For all beekeepers it probably is not over 15 pounds. For commercial producers 25 or 30 pounds, perhaps, is a fair average. If one is able to handle a maximum of 300 colonies, he may get 300 or 400 cases. At $4.00 to $5.00 per case, his gross income will amount to $1500.00 or $1600.00. From this amount must be deducted cost of sections and cases, interest on investment, depreciation, rent, labor, maintenance of equipment, including truck, etc. After deducting these and other items of expense, it might be of interest to compare the results with those of some other lines of endeavor. For example, in this locality common labor demands $4.00 to $6.00 per day of eight hours; carpenters, painters, bricklayers, etc., get $1.50 an hour and upward. With the knowledge, skill and business ability to manipulate properly 300 stands of bees and to successfully market the honey at a real profit, in an ordinary locality, one should be able to command an income of $3000.00 per year in some other capacity.

The question is asked, "What can be done to attract more beekeepers to specialize in comb honey?" While we must admit that there are a considerable number of beekeepers who are willing to work sans profit, I am going to hazard a guess that only one thing will induce a man with business foresight to enter the game, and that is greater profits. Unless production can be cheapened, there are only two ways in which the business may be made more profitable. One is to increase the demand; the other is to decrease production. Supply and demand are the most potent factors in determining the price of any commodity, and it would seem that when the supply exceeds the demand, or when the price goes so low that production is no longer profitable, the wise thing to do is to bend our energies toward increasing the demand, rather than toward enlarging the supply. We must admit, of course, that there is, just at present, an abnormal shortage of comb honey, due to crop failure and other causes, but there is no certainty that this condition will continue. It is a shortage, by the way, which is not adequately reflected in increased prices, because of our lack of organization. Beekeepers cannot expect a fair price for their product until they are willing to co-operate and to give proper moral and financial support to those organizations which are endeavoring to increase the demand for honey and to secure for the producer a reasonable return. To increase the supply without a corresponding consumption of the product simply results in lower prices and in losses rather than profits.

"Can the demand for comb honey be filled with extracted?" I believe that extracted honey can replace comb honey very largely if put up in attractive containers and brought to the attention of the buying public. In this vicinity about three times as much extracted honey is consumed as comb honey, and nearly all of it is sold in pails. I believe that the relative amount of production of comb and extracted honey is a problem that will solve itself, that the difference in prices per pound will increase and that the profits will become more nearly equal.

Indiana.

Paste for Tin

On page 613, December issue of the American Bee Journal, "Ohio" asks for a formula to make paste for tin and glass.

This is what I use, and it answers the purpose well if made right:

For one quart—Take one quart of warm water; add to this (not too fast, and stir continually) just enough corn starch to make the water white or milky color; add enough lye to cook it. Care must be taken not to get too much lye, or it will stain the labels. Add lye very slowly and watch the paste, for when enough lye has been put in it will become clear.

This preparation does not cost much, and with a little practice anyone can make it very easily.

J. H. Wardell.

From South Dakota

Our 300 colonies of bees are in cellar 42x12 and 7½ feet high, with 5 feet of earth on top of them. Our cellar is in level ground. We winter no bees out of doors, as it costs us too much money to do so, in honey. What's the use in leaving bees out of doors to fight the cold Dakota winters? These cold, freezing and windy days and nights the temperature stands at −45 continuously and has not varied one degree.

O. G. Borton.

"REGULARS" OF CITY'S CURB MARKET, OLD HEADS IN TRADE AT AGE OF 8 AND 10

By Eleanor Huffman.

Honey for sale on the courthouse square.

And the busy man or woman who's short-cutting across the parish's property, and is perhaps a little cross or down in spirits, must smile to see a midget of a bobbed-haired girl seated behind a table of golden jars. An upturned yellow pop box is her high seat of finance, and she swings her small legs and waits for customers.

The trees upon the square make a cool shade for her and she handles a business of $15 or $20 a day with as much ability as a grown person could, although she's only 8 years old.

Eight years old—and a $10 bill means no more to her than a 50-cent piece when she comes to change it.

No wonder people smile, because they don't know whether the "Honey" sign applies most to the stock she watches over or to her own little sorrel-topped head.

Joy Reppert is an Iowa miss and has quite a bit of Yankee self-reliance. When the sun comes down in the afternoon, growing hotter and hotter, she slips down off her yellow pop box and threads her way between the lumbering oil trucks and limousines crowding the street to the place of the selling of pink ice cream cones. In imagination she feels the cool smoothness of a "strawberry and vanilla mixed" coursing down her tiny freckled throat, and so she leaves the stand unguarded while she consumes a bit of the day's revenue in ice cream.

When she comes back, well slaked and "coned," nothing is different at the stand. No one ever takes from the smart business woman while she's away, because in working every Wednesday and Saturday downtown, where children and pets are seldom seen, she's won a place in the hearts of people who've seen her there for some time.

But here's the secret—it's not always Joy. She has a sister 10 years old who minds the stand part of the time, but they're so much alike that few people know there are two children who take turns at selling sweet stuffs.

In the morning one of them rambles over the Market street bridge from Agurs village, where they live, in a Ford driven by "a boy who works on the bee-farm." The jars of honey and their small guardian are landed at Texas and Marshall streets and stay there until 5 or 6 o'clock in the evening all by themselves.

But goodness, any two youngsters who went all the way to Burlington, Iowa, on the train alone when they were only 6 and 8 years old have no fear of being able to sell honey and take care of themselves on the square, now that they're 8 and 10.

"We like it down here better," says Billie Lou in a childish drawl which can't decide whether to stay Iowa-like in accent or to succumb to Dixie influences. "We're going to live here all the time, cause we don't have to go to school in the snow here."

So the Travis street school will have the little whizzes at arithmetic back with it this year, and maybe all the time, until the eighth grade is passed, and Joy and Billy Lou will continue to show what a little practical business experience can do for children studying "two times two."

They'll be swinging on the chains about the grass of the courthouse square for some time yet, and frequenters of Texas street will never be able to forget that there's at least one bright spot in a gloomy world when they see Joy's smile and her bright red head over the jars of honey.—From Shreveport, Louisiana, Times.

Oregon State Beekeepers' Association

The Oregon beekeepers, at their annual meeting at Hermiston, elected the following officers: President, J. Skobvo; vice president, A. J. Sanford; secretary, H. A. Scullen. The meeting at Hermiston was well attended and reported very interesting. Our old friend, George W. York, formerly of the American Bee Journal, was present and was one of the speakers. The Hermiston Herald devotes about two columns to the meeting.

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78 Years With Bees

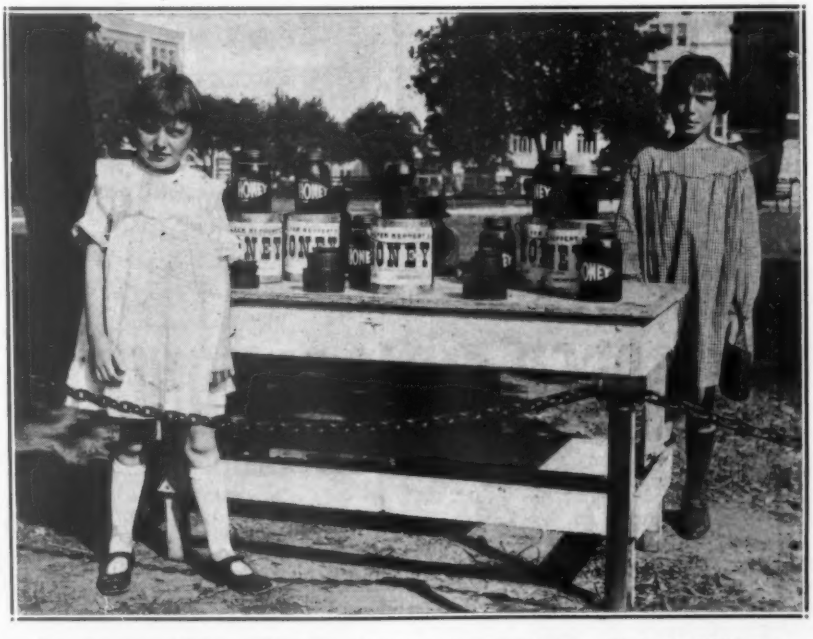
J. W. Ware, of Puyallup, Washington, secured his first bees when he was six years old. He is now 84, and has accordingly been a beekeeper for 78 years. It would be interesting to know whether there is any man living who has kept bees for a longer time. If so, the American Bee Journal would like to know about it.

His present location in the heart of the city is a rather poor one for bees. His season is short and the flow comes early, with no late fall flow to prolong the season. Mr. Ware, like many others, likes to try different systems, and has accordingly kept bees in all kinds of hives from smallest to largest. To get a crop in his situation it is necessary to have the bees go into winter quarters with young queens and large clusters of young bees. This will favor early brood rearing and prepare for the early honeyflow.

Although Mr. Ware has bees in a variety of hives, he writes that the hives with ten frames, which are 14 inches deep, are the pride of his yard. They have been used for fifteen years with little attention and without casting a swarm. The way these big hives turn out the surplus honey makes him smile. Last spring one of them gave a surplus of 80 pounds when the crop was generally a failure, his standard hives giving only 20 pounds.

His best yield was 340 pounds of extracted honey from one colony in a hive with the deep frames. A colony in a 14-frame Langstroth hive was a close second.

Mr. Ware is wintering 30 surplus queens over colonies with a double fly screen between the bodies. In this way a queen with a small cluster of bees will come through safely. Such experiments on the part of a man of 84 years surely indicates that a wide-awake beekeeper refuses to grow old.



The Reppert children with honey stand in Shreveport, La. Photo by Milburne.

WISCONSIN'S FIRST HONEY WEEK

By Malitta D. Fischer.

WISCONSIN'S first Honey Week November 19-25, was a concentrated effort on the part of our members to make "Badgers" just a bit sweeter. In other words, during this time an "Eat More Honey" campaign was launched.

Because of action taken at the 1922 convention our Governor was three times asked to declare a State Honey Week during 1923. After three refusals, it was pointed out that such a declaration would not be possible for the state executive, since it would compel him to issue a proclamation for any type of week an organized group might demand. However, we were assured of a letter of endorsement and advised to declare such a week under the association name. Therefore, the association officially made this declaration one month previous to November 19.

Last July questionnaires were sent to twenty-five state associations asking for detailed information concerning any similar campaigns they might have conducted. Reports were received from eighteen states, two of which had held state honey weeks, and three of which had held district or local honey weeks. The California campaign was the only one carried on under supervision of a central organization. In no case was there any indication of a large amount of honey going out under one trademark.

Before taking up what was actually done, let us look over what we had to work with. Each one of the following articles were in the form of advertising material.

20,000 Badger Brand lithographed pails in the hands of 95 members.

61,400 Badger Brand labels in the hands of 100 members.

6,900 Badger Brand letterheads and 8,500 envelopes in the hands of 45 members.

4,500 honey booklets in the hands of 22 members.

577 Badger Brand Posters in the hands of 76 members.

11 Badger Brand movie slides in the hands of 6 members.

Roughly estimating, around 390,000 pounds of Wisconsin honey is being marked this year in containers bearing the same trademark.

Our efforts were not confined, however, to just those using this trademark, as we felt "Honey Week" was an opportunity for every wide-awake beekeeper in the state to educate the public to eat honey, and therefore gave assistance to all beekeepers asking for it.

After the dates were announced, that which remained to be done was largely in the hands of the local associations and individual beekeepers. But the state organization was able to do a number of things which could not have been done by either locals or individuals.

In the first place, letters of instruction were sent to all members and officers of county associations—33 affiliated and 11 non-affiliated, These letters contained directions for individual and collective campaigns—How to get your grocer to handle your honey; how to arrange your display; how to run special features such as demonstrations, lectures, shows; how to advertise, and standard honey prices.

In addition to suggesting what members should do, the association was able to—

1. Secure letters of endorsement from the Governor, State Health Officer and Director of Department of Markets. (These were of great help in publicity work).

2. Secure the co-operation of University Journalism Department, University Radio Broadcasting Station, University Home Economics Department, the State Board of Health, State Department of Markets, and State Department of Education.

The Journalism Department assigned several of their students to preparing articles on bees and honey. These articles were released through the University Press Bulletin, which is sent to all daily and weekly newspapers in the state (about 450). Clippings now coming in show that a large number of such articles were printed.

Through Professor H. F. Wilson a series of five radio talks were arranged to be broadcasted from the

"Muver lets me help myself!"
Honey is a natural sweet which has no ill effect on the digestive system. It is very beneficial to children as a mild laxative and will help to keep them well.
PURE WISCONSIN
NET WEIGHT 5 LBS.
PACKED UNDER THE DIRECTION OF
THE WISCONSIN STATE BEEKEEPERS ASSOCIATION, INC.
BADGER BRAND HONEY
SOLD HERE
Packed under the Direction of
Wisconsin State Beekeepers' Association, Inc.

Wisconsin Beekeepers' Association Poster.

University Station. These were:

"Some Interesting Facts About Bees and Honey," by H. F. Wilson, November 9.

"Some Facts Everyone Should Know About Honey," by M. D. Fischer, November 16.

"Selecting Honey for Table Use," by L. P. Whitehead, November 19.

"The Care of Honey," by V. G. Milum, November 21.

It is hardly necessary to emphasize the unlimited advertising value of radio broadcasting. Recently one of the Chicago papers stated that the radio receiving set is a commonplace in the hands of more than 10,000,000 persons. We were very much interested in a comic which appeared just ten days after the last radio talk was given. This comic, "It Happens in the Best of Regulated Families," in the Chicago Tribune, showed a man at his radio getting lectures on "bee culture," etc. When our cartoonists use bees and honey in their comics, they are advertising our business.

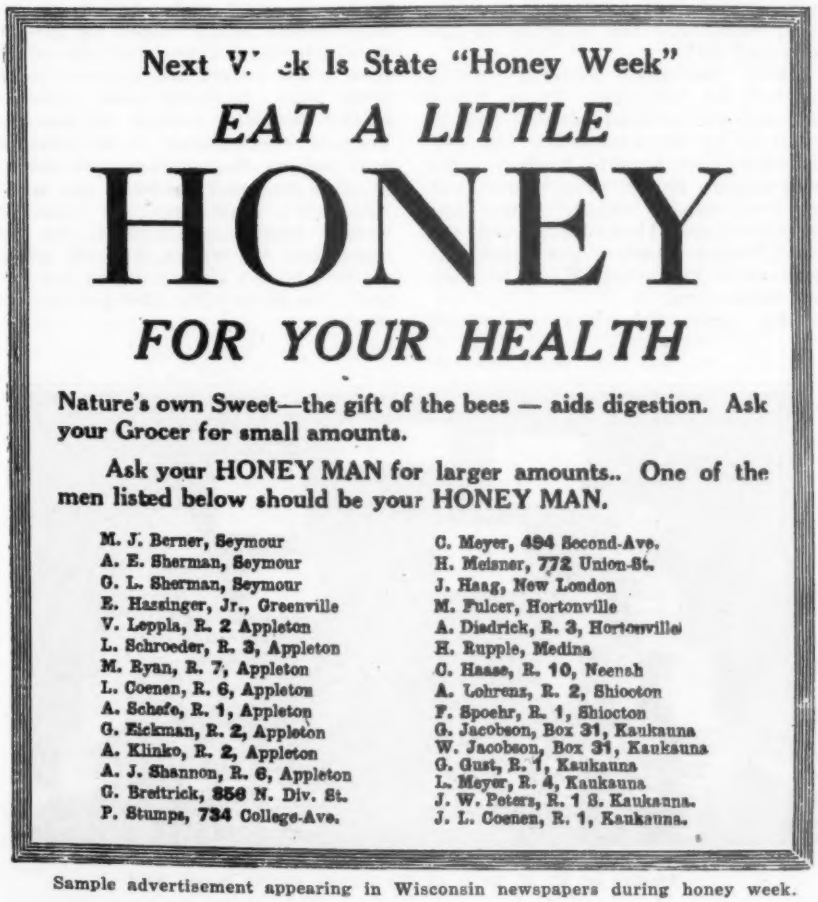
One of the home demonstration agents of the Home Economics Department gave special demonstrations on the use of honey at her lectures in Sawyer County during this week. She also distributed several hundred honey booklets furnished by the association.

In their regular bulletin, sent to local and district health officers, the State Board of Health included an announcement of Honey Week.

The State Department of Education followed this plan in their mimeographed notice to district school supervisors and also mailed 250 honey booklets to special supervisors. In addition to their endorsement, the Department of Markets asked their honey grading inspector to devote considerable time at these bee meetings he attended in helping beekeepers arrange for special exhibits, displays and demonstrations.

Mr. L. B. Whitehead, Extension Apiculturist, made a special point to organize honey week plans at every meeting he held previous to honey week.

The one outstanding feature at Madison was the bee and honey show as given by the Apis Club, a group of students at Wisconsin interested in scientific beekeeping. Everyone (local beekeepers and students) participated in this show, which was held November 23. The program consisted of a reading, beekeeping movies (3), crystal gazing, demonstration with live bees, monologue, "A Dutchman and His Bees"; lantern slides giving comical quips entitled, "Buzzes of the Day from the Beehive," and slides giving facts about honey. The show itself was given in the auditorium of Agricultural Hall, and an admission of ten cents was charged. In the corridors of this same building was an exhibit about fifty feet long and ten feet wide, showing modern beekeeping equipment necessary for the production of comb and extracted honey. In the center of the large entrance hall was a "Honey Booth" occupying a space about twelve feet square. Six girls wearing on their foreheads ribbons bearing the word "Honey" attracted much attention. The girls very "sweetly" sold honey popcorn balls, honey cookies, honey condies (from five states, including Wisconsin), and comb and extracted honey to the visitors. About 300 girls and boys from the grade and high schools attended the afternoon performance and about 205 adults the evening show. The net profit from the sale of tickets and the honey booth was $51.72. This amount was turned over to the Bradley Memorial Hospital for crippled children, to bring Yuletide cheer to these youngsters. A box of honey bittersweets and honey scotch was also sent the children, and the Apis Club has been given several nice "write-ups" in the college magazines and papers.


Next W. ek Is State "Honey Week"
EAT A LITTLE
HONEY
FOR YOUR HEALTH
Nature's own Sweet—the gift of the bees — aids digestion. Ask your Grocer for small amounts.
Ask your HONEY MAN for larger amounts.. One of the men listed below should be your HONEY MAN.
M. J. Berner, Seymour
A. E. Sherman, Seymour
C. L. Sherman, Seymour
E. Hassinger, Jr., Greenville
V. Leppla, R. 2 Appleton
L. Schroeder, R. 3, Appleton
M. Ryan, R. 7, Appleton
L. Coenen, R. 6, Appleton
A. Schefe, R. 1, Appleton
G. Eickman, R. 2, Appleton
A. Klinko, R. 2, Appleton
A. J. Shannon, R. 6, Appleton
C. Breitrick, 858 N. Div. St.
P. Stumps, 734 College-Ave.
C. Meyer, 494 Second-Ave.
H. Meisner, 772 Union-St.
J. Haag, New London
M. Fulcer, Hortonville
A. Diedrick, R. 3, Hortonville
H. Rupple, Medina
C. Hasse, R. 10, Neenah
A. Lohrenz, R. 2, Shiocton
F. Spoehr, R. 1, Shiocton
G. Jacobson, Box 31, Kaukauna
W. Jacobson, Box 31, Kaukauna
G. Gust, R. 1, Kaukauna
L. Meyer, R. 4, Kaukauna
J. W. Peters, R. 1 S. Kaukauna.
J. L. Coenen, R. 1, Kaukauna.

Sample advertisement appearing in Wisconsin newspapers during honey week.

Schools

Four lectures were arranged for the public schools at Madison.

November 20—5th and 6th grades, 65 children addressed by Dr. Siebecker.

November 21—5th, 6th, 7th and 8th grades, 125 children addressed by V. G. Milum.

November 21—5th and 6th grades, 60 children addressed by V. G. Milum.

November 21—7th and 8th grades, 90 children addressed by V. G. Milum.

In every case, although the speakers had been informed by the city superintendent that not more than twenty minutes would be allowed, they found the teachers and students so interested that they were forced to talk more than an hour to answer questions.

Each speaker illustrated his lecture with a one-frame observation hive containing live bees and a few jars of honey showing the different colors and flavors. The speakers were especially enthusiastic over the curiosity and intense interest shown by the teachers and children. In fact, a week after "Honey Week" a request (one might call it a repeat order) came in like this: "We have just learned that one of your men gave a talk at the Harvey school last week on 'Bees and Honey.' Our civic meeting will be next Tuesday and we would like to arrange to have him with us." The speaker was arranged for, gave the talk on November 27, and reported an attendance of 200.

Not alone in Madison were lectures given in public schools. One of our members in Sheboygan County, Ivan Whiting, reported having given four talks to 275 high school students and 100 grade school children.

Only two weeks ago blanks were sent to our members for a report on what they did during this period. Not sufficient time has elapsed to permit them to report. However, at this time detailed reports are on file from 25 members in 18 counties, showing that a total of 325 stores handled honey for these 25 members during this week. Of this number 245 handled Badger Brand honey. The

Window display of Louis A. Loboda during honey week—47 stores handle his products.

largest amount of Badger brand honey sold during "Honey Week" by any one member through the stores, so far reported, is 510 pounds.

Reports

The reports are very interesting and show the favorable effect of such work on the grocers. In a number of cases when members called to remove the remaining honey at the end of the campaign, the grocers asked them to leave it, as they wanted to include it in their general stock.

In one city the beekeepers were able to get candy shops to make honey candy specials. One shop ran a special honey candy ad four times during honey week.

Another candy shop made some special honey butterscotch and filled their window with the jars of honey, scattering the honey butterscotch in the spaces between the jars.

Because of the opportunity to personally visit stores at Madison, more specific information can be given. It was found that three bakery shops were using honey regularly in their baking and two agreed to run "Honey Week" specials. At least 50 per cent of the restaurants written to were serving honey, three drug stores had special displays of preparations in which honey was used. These preparations were largely cough medicines and hand lotions.

Even with but 25 reports on file, we are convinced that "Honey Week" is one of the most successful forms of advertising available. Just two quotations from the reports are given to show how our members feel:

"Results wonderful. Effects still very noticeable. We thought it desirable not to make another great stir this year, as our supplies of honey are melting away very fast."—(From southwestern part of state.)

"Honey Week is surely worth while, for it is perhaps the **only way** at the **present time** of getting the beekeeper to advertise and of getting the people interested in honey. I surely am in favor of having another Honey Week in 1924. I was able to induce our local ice cream parlor to serve honey sundaes, donating the honey so as to make a start."—(From eastern part of the state.)

The 1924 Honey Week

Plans for a similar campaign next year are now being formulated. Where members this year were informed about the work thirty days in advance, next year they will be reminded once a month from the first of the year up to the time of Honey Week. If thirty days' notice can get members in eighteen counties to take hold, what will ten months of announcing do?

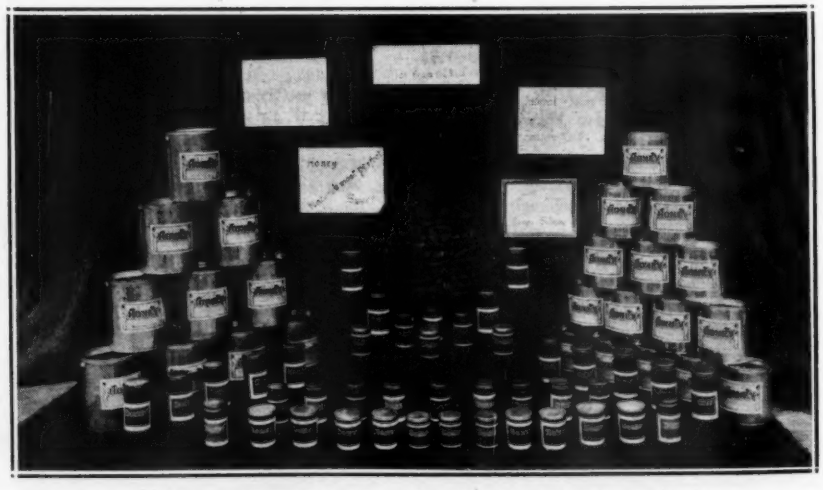
About the same general procedure will be followed. It is hoped that special printed letters can be made up by the association and furnished to members to mail to their local bakery shops, drug stores, restaurants, candy shops, hotels and grocery stores. These letters will tell the different retailers how they may participate in Honey Week to their own advantage.

Two stores this year requested "honey" demonstrators, and a special effort will be made this year to locate at least ten "honey" ladies to carry on such work during the next campaign.

Where special advertisements were made up for about twenty members this year, preparations are now under way to have a series of advertisements in mimeographed form mailed to all members next year. Some of the advertisements run by local associations and by members of the state association have been clipped from newspapers and sent in. They are very interesting from the standpoint of co-operation. No doubt at least 50 per cent of our locals next year will do collective advertising.

Instead of three or four educational articles being available, as was the case this year, a series of seven articles will be made up and mailed to members. Such a series, one appearing each day, was run in one of the Madison papers during honey week and was found to work very well.

The best feature of the whole idea is that honey is still selling—no plan **is** worth while unless it does bring in repeat orders. It will only be a matter of carrying out four or five state honey weeks when we will find **every week a honey week.** Then, and only then will our markets be stabilized. With honey on the grocer's shelf all the time, just like peas, corn, peanut butter, butter, sugar, or any other article; with honey included in the daily or week end ads of grocers; with honey being talked by grocers, it **will** become a regular part of the diet. But to get the grocers to the point where they will **want** to do this is the problem. **Only by our beekeepers recognizing trade channels and making that recognition evident in their business methods can we do this.** We must find out what the grocer wants and then, if we give him what he wants, he will gladly deal with us. Honey weeks are very valuable in getting the grocer's co-operation.



Display of W. E. Reim, of Hustisford, during honey week.

BLACK VS. YELLOW DRONES

By H. A. Mark.

I see by the December, 1923, A. B. J. that the question Black vs. Yellow Drones has not been settled yet. (Page 629). Perhaps you will accept my testimony. Our real estate holding in town adjoins the residence area on the north. It is 1,000 feet long. The east end is bounded by a street and east of this street is a grove in which a neighbor keeps bees, having had from ten to twenty colonies there for the past 10 years. A creek, coming from the northwest, traverses the length of our tract and passes through his grove of trees.

In 1920 we procured our first bees. Three weak nuclei (one queenless) in movable frame hives and two box hives. Of the two queen-right movable-frame hives one is Italian, the other hybrid. Of the box hives, the stronger are blacks and the other are Italians, producing a very beautiful golden and mahogany marked drone. Those bees were located on the ditch bank at the extreme west end of our tract. At this time our neighbor had twelve colonies, all blacks.

We tried transfer of the box hives by the slow process, succeeding with the blacks, but not the other. So we made increase in the following manner: With a movable-frame body above or below the box, as soon as the bees began storing honey in either of these, the box was removed to a new location and a frame with eggs, taken from the movable-frame Italian nucleus, was given the body on the old stand. We increased to a total of thirty nuclei, all bees from the queens reared from Italian eggs showing three bands. The bees from queen reared from the black colony showed hybrid markings.

That winter I made the mistake of wintering these nuclei in three-compartment bodies with all three entrances facing the same way. In the spring these three colony bodies had only one queen each, leaving us but sixteen colonies. I purchased three colonies, one Italian and two hybrids.

In 1921 I stationed our colonies along the creek so that the most easterly ones were within 400 feet of my neighbor's colonies. The year before, not caring for more colonies, he had allowed his swarms to escape and gave his bees no attention whatsoever beyond giving supers to the hive. That year he left his bees in charge of a tenant who hived the swarms and increased the total holdings to eighteen colonies. No attention was given these bees beyond hiving the swarms and putting on one super per hive. We increased our colonies to thirty, breeding our queens and requeening the black and hybrid colonies. All our matings showed pure three-bands, and in the fall our neighbor had only one colony that had any pure black bees. Most of the others had one to three plain yellow bands.

In 1922 we removed most of the old colonies from this location, leaving a few of our best colonies, and used the stands for starting nuclei. All of our matings were pure. By fall we had again built up to thirty colonies at this yard. Our neighbor had paid no attention to his bees, not even adding supers, and swarms had issued the whole summer long. We hived one of these swarms that he had seen issue from one of his hives. Most of the bees would be classed as leather-color three-band Italians. There were a very few showing only two yellow bands. When fall came he did not have a single bee, as far as I could find by careful observation at the entrance that did not have at least one yellow band.

Early last spring I hived a swarm from this yard in which I could not find a solitary bee with less than three yellow bands. I raised a queen from eggs laid by the queen of this swarm and she built up a strong colony in which I cannot find anything but three-band bees.

Last spring nine of my neighbor's colonies were sold. The purchaser gave them into my care. I united eight of them into four, leaving the bees to decide which queens to keep. Ten of the queens retained were light mahogany, producing rather light leather-colored three-banded bees. The third produced yellow three-band bees. The fourth produced a very dark, almost brown, three-band bee. The drones of the first two were medium, but not uniform in color. The drones of the third were mostly light and with an occasional one nearly golden with light mahogany markings. The drones of the fourth queen were all black.

The reader should remember that these four queens last described were from a yard that in 1920 was producing only black bees and that not a thing had been done to these hives or bees except to hive swarms, put on and take off supers, until I took charge of them this spring. More than half of the comb in these nine hives that came into my care was drone comb. The eight that were united were the size of ten-frame Langstroth hives and none of the combs were movable. The 9th hive was an eight-frame with the combs built in starters and were part removable.

While all of my matings, as noted above, produced three yellow-band workers, they did not all produce uniformly marked drones. As far as I know, none of the colonies in my neighbor's yard have produced uniformly marked drones. It is this experience that has led me to believe that any queen producing three-banded workers but not uniformly marked yellow (or mahogany) marked drones is not thoroughbred, even if direct importations from Italy.

The larger area of our bee pasture is west of town, but instead of flying direct (on a "bee line," as bees are supposed to do) this neighbor's bees followed the line of the creek and the canal and did not leave the canal until directly north of the pasture, which was all south of the canal. My bees did about the same. Thus his workers all passed our hives. This may have helped to cause his queens to meet our drones. I do not know.

My explanation of the matter is that in the hybrids resulting from this mating the color characteristics of the yellow bees were dominant so that their markings were given to the descendants. The reason that practically all of the queens in both yards met the yellow drones was because these drones were stronger and swifter than the drones from the other colonies. The Italian colony I procured originally in the movable-frame hive started its first queen cell last September. I used it to head a nucleus. They produced a second cell and reared a new queen. I saw both the old and new queens last November, but this spring the old queen was not to be found. The Italian in the box hive was killed by the combs breaking down in July, 1921, leaving no descendant. The colony had never swarmed. The queen I procured with an Italian colony as mentioned above in winter of 1920-21, I am still using as a breeding queen. This colony has never started a queen cell, but has produced over 200 pounds of surplus, building all the combs from foundation. I have never reared a queen from this colony, using this queen only for producing drones.

Oshkosh, Neb.

(Regarding the matings, the color of the drones and the greater or lesser dominance of a race, I do not think we can say anything positive, because we do not control the mating and never know just of what race the drone was with which a queen mated. As to the color of drones, all authorities agree that in Italy, both drones and queens are irregular in markings. But to say that the Italians of America are purer Italian than the Italian bees on their native heath is to make a hyperbole. The American Italian bees are yellower (in some cases) than the Italy Italians, but they cannot be purer; for there is only one country in Italy where there is any mixture; that is on the narrow strip south of the Ligurian Alps, where there is a connection with France, a strip of land a few miles wide and many miles long. The mountains behind this strip prevent any mixture. An article by an Italian living in the Ligurian Alps, Mr. Oreggia, gave a very definite explanation of this in the American Bee Journal for May, 1916, page 159. On all other sides, for instance along Switzerland, the snow-capped mountains entirely prevent any mixture. But there is no doubt that, in America, we have eliminated the dark color in many cases, in queens and drones.—C. P. D.)

THE ODOR OF FLOWERS AS A MEANS OF COMMUNICATION AMONG BEES

John H. Lovell.

The Round Dance of the Nectar Gatherers—The Wag-Tail Dance of the Pollen Gatherers

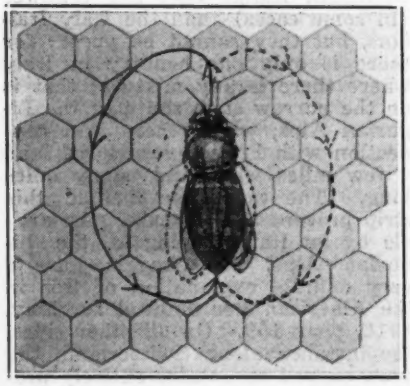
ACCORDING to the recent observations and experiments of Dr. K. v. Frisch, the odors of flowers serve not only as an allurement to attract the attention of scout bees searching for food, but also as a means of communication in guiding the workers of a colony to nectar-yielding flowers which mave been discovered by one or more of their number. The following brief summary of his conclusions is largely a condensed translation of passages from his very instructive book, **Die "Sprache" der Bienen.**

Let us assume that within the fight-reach of a colony of bees a species of plant is in bloom, and that its flowers secrete nectar that is accessible to honeybees. So long as the flowers are not discovered, the nectar will accumulate in considerable quantity. As soon as a bee discovers this new source of food, it will suck itself full. It will then return to the hive and communicate this information to it companions. A few of them will presently find the flowers, and the concourse of new bees will continue to increase until their number stands in a definite relation to the quantity of nectar available. As soon as the gatherers are so numerous that they can easily collect all the nectar supplied by the flowers, their activity will decrease and they will receive little further reinforcement from the hive.

Two questions in this connection present themselves: 1. How do the discoverers of a field or grove of newly opened nectar-yielding flowers impart this knowledge to the other bees of the colony? 2. How do the other bees in the hive find these nectar-yielding flowers? Also, why does the concourse of new bees continue to increase only so long as there is a surplus of nectar?

It is easy to answer the first question, since it is possible in an observation hive to observe the behavior of the bees and their departure to the field. A bee that has sucked itself full either of nectar, sugar water, honey or honey-dew, after each return to the hive performs on the comb a round dance. The round dance throws the bees near-by into a state of great excitement, and causes them to fly out and seek for the new source of food. The bees coming in with partial loads do not dance, and so few new bees fly out. The dance makes known in the colony the existence of a load worth gathering.

Basswood blossoms. Nectar is secreted by the concave sepals.



The wag-tail dance of a pollen gatherer. The bee runs alternately half circles to the right and left, returning each time along the straight line through the center. Here she wags her body rapidly, as shown by dotted lines.—(After v. Frisch.)

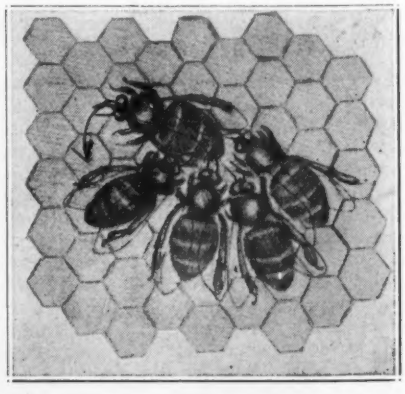
The Round Dance

The round dance, or "Bienenballet," was observed in 1788 by Ernst Spitzner, and thirty-five years later, in 1823, by Unhoch. Probably it has also been witnessed more recently by many other observers. The full significance of the dance has now been thoroughly investigated by K. v. Frisch and most interestingly described in his **Die "Sprache" der Bienen,** the most notable contribution made to our knowledge of the honeybee in many years.

A bee discovers a honey plant, as a grove of basswood or a field of buckwheat, beginning to bloom. She gathers a load of nectar and flies home. As she runs upward over the comb she meets a number of bees standing idle upon it. To each of them she gives, when gently stroked by their antenae, a part of her load of nectar. It is thus distributed to two or three, or sometimes to a greater number of her companions. Her burden disposed of, the gatherer is now free to go back and gather more nectar. Many times she does this without further delay. But more frequently she runs further up on the comb, on which are many of her comrades, and begins the round dance, which was described long ago by Spitzner and Unhoch.

With rapid, short steps she runs round in a circle, a circle so narrow that usually only a single cell lies inside of it. She does not move continuously in the same direction, but, making sudden turns, she runs back and forward around the same center. Often she runs one or two complete circles without reversing the direction, but often the turns follow each other quickly, and she describes only one-half or one-third of a circle in each direction. During a round dance in one place there may be as many as twenty turnings, or even more; but, as a rule, they are fewer, on an average from six to ten. The dance usually lasts about one-quarter of a minute, but it may close after one second, or it may continue as long as one-half a minute, rarely even longer, as a full minute in one place. Frequently the bee runs to another place on the same comb and dances here a second time. It often happens that she performs the dance in three or more different places. As quickly as the dance was begun, so quickly it stops. The dancer runs down to the entrance and flies away again to the flowers.

The round dance is never performed on a comb on which there are none or only a few bees, but it always takes place in the midst of a dense throng. The impetuous turnings of the dancing bee excite great commotion among the bees near her.



Round dance of a nectar gatherer. Four other bees, resting their antennae on the posterior end of her abdomen, are following her in all the windings of the dance.

They turn their heads toward the dancer, and often three or four, or half a dozen, seek to hold their antennæ on the posterior end of her abdomen and trip along behind her. Thus she draws along with herself a small swarm, which make in company with her the rapid circular dance with all its windings—a droll sight and one hard to describe in words.

When, at the end of the dance, the dancer starts for the entrance, one or two bees may start after her; but they quickly lose contact with her and never follow her farther than over a few cells—never so far as the entrance. A part of the bees, many times all of them, which tripped along behind the dancer are aroused by the dance to seek the new source of food.

A bee dances not only after its first return to the hive, but after each subsequent return, so long as there is an ample supply of nectar. Thus the number of bees levied by the dancer continues to increase until the bees are able to gather only a partial load. Let us illustrate this by an example: If basswood flowers were gathered and insects excluded from them for several hours, an abundant supply of nectar would accumulate in them. Then would bees, which had quickly obtained a full load on the flowers, perform on their return to the hive a lively round dance on the comb; and new bees would soon come to the place of the new source of food. But if the flower clusters were visited for a long time, and the number of gatherers was so great that the secretion of nectar failed to keep pace with its removal, then the dance would come to an end at the same time as the surplus of honey.

The Bees Levied by the Dancer Fly Out in All Directions

The bees which fly out of the hive in search of the new source of food do not accompany the dancers, but they fly out quite independently of them and seek in all directions of the compass for a distance of a kilometer for the nectar-yielding flowers. This is essentially a different way than has been supposed up to the present time, and is better adapted to the end in view. How often has Nature found a better solution of a problem than man has been able to devise! If the discoverers of the nectar-secreting flowers should bring the other members of the colony directly to them, then there would soon be found on the flowers, first discovered accidentally, an overplus of gathering bees; while a stand of the same kind of flowers in another locality in this region, which had opened their petals at the same time, might remain unfound for a long time, perhaps forever, greatly to their detriment as well as to the injury of the bees. But by seeking in all directions over a circular area nearly two miles in diameter, of which the hive is the center, and especially by seeking after the flower scent brought in by the dancer, the newly opening flowers of this plant species are soon found in all places.

The Odors of Flowers as a Means of Communication Among Bees

Let us now endeavor to answer the second question. How do the bees in the hive, levied by the dancer to seek for a new food source, find the flowers discovered by her? The strong scent exhaled by newly-opened nectariferous flowers clings in a quite remarkable manner to the bee's body. This scent is noticed with pleasure by the swarm and is impressed on its memory while the dancers are dancing on the comb, and the traces of it left behind are examined with their scent-perceiving organs or antennæ. When they fly forth on all sides they already know the scent of the nectar-secreting flowers on which their comrades have been gathering, and seek for this known scent. In this way the flowers which offer a full load are very easily found.

The first bee searcher flies out of the hive without a fixed goal. It is she who must discover a new food source. For her the flower scent serves as an allurement to attract her attention. If she finds scented flowers, rich in nectar, on her return to the hive she dances on the comb, and thus causes other bees to fly out in search of food. These secondary searchers do not as yet know the location of the food source, but they have a definite clue to guide them; they seek in all directions for the scent which the dancing bee brought into the hive from the flowers. This was impressed on their memory as they tripped along behind the dancer and held their antennæ on the hind end of her body. It is apparent that blooming plants, scattered widely over a large area, which in various localities at the same time open their corollas, must in this way be found and utilized by the bees. Thus the discovery of a stand of flowers by a single scout bee brings into the hive a small quantity of their scented nectar, and gives an impulse which in a short time sends forth a company of active searchers in all directions. No more effective or better means can be imagined for the discovery of an abundant food source, nor one which will so quickly and completely bring into the hive the food available.

Only a brief summary of the observations of v. Frisch can be given in this paper. The descriptions of his many experiments, which are given in detail in his **Die "Sprache" der Bienen,** must be wholly omitted. A few additional notes may be added. If the flowers are scentless, as occasionally happens, the bee still performs the round dance as before, but the flowers are found in a somewhat different manner, as has been briefly described by von Buttel-Reepen in the July number of the A. B. J. The pollen-gatherers communicate to their comrades in a manner similar to that of the nectar-gatherers the existence of a rich source of pollen. But this is done by a "wag-tail dance," which differs greatly from the round dance. The specific scent of the pollen brought into the hive serves as a means of communication in regard to pollen-producing flowers, as did the flower scent in the case of the nectar-gatherers.

The Wag-Tail Dance

A brief description of the wag-tail dance is as follows: A bee comes home laden with pollen, crawls upward on the honeycomb, and begins in the midst of the other bees to turn around in a circle, but she does not describe a full circle, as takes place in the case of the round dance, but a half circle, nearly. Then she runs back in a straight line over two or three cells to the point from which she started. She now turns to the other side and runs a second half circle, which, with the first half circle, makes a complete circle. Then she runs in a straight line along the diameter of this circle back to the starting point. She then runs the first half circle again and comes back to the starting point by a straight line; then she runs the second half circle again and comes back to the starting point as before, along the diameter, and so on. She runs alternately a half circle to the right and then a half circle to the left, going back at the end of each half circle along the diameter to the starting point. The running in half circles goes on quietly without unusual movement, while the running back in a straight line is each time followed by the wag-tail dance. In this dance the movement of the posterior end of the body is the greatest and of the head the smallest. The point around which the movement revolves is near the head of the bee. The body moves so quickly that one can only estimate the number of movements back and forth, but cannot count them. If one counts each movement of the body to the left, then to the right, and back again to normal position, as a wag of the body, then, as a rule, the bee after each straight run is estimated to wag four to twelve times. The subsequent behavior of the bees is very similar to that which takes place after the round dance.

A Book on Pollen

Through the kindness of Mr. Alois J. Klein, of Brainerd, Neb., we are in receipt of a copy of the book, "Pollen the Bee Bread," by Rev. Ivan F. Kitzberger. It is published at Prague, Czechoslovakia, in the Bohemian language. It is an attractive little book of 168 pages, with paper cover, written in a clear and attractive style and has a number of original illustrations. Rev. Ivan F. Kitzberger is a clever writer and his monthly publication, Vcelarskerozkledy, is revolutionizing beekeeping methods in his country of Czechoslovakia.

WATTS WATT AT THE BEE MEETINGS

Old Watts has attended several. They are all more or less alike. The secretary, who usually does all the work and is just like old Watts in one regard; that is, he gets blamed for whatever goes wrong and gets little or no credit for whatever goes right—the secretary opens up the meeting by a cordial invitation to the mourners to come up close and drop a dollar into the contribution box. A few do so; and at each recurring recess, recall or adjournment, the poor secretary makes the announcement again and a few more respond. Not a single state or county association has money enough to run on, and even though beekeepers fail and refuse to give up real money for their support, yet they never fail to sit back and criticize the officers because "the organization does not accomplish anything." How in the name of economy could they do much on one dollar a year? Beekeepers, like everybody else, must learn that they cannot get something for nothing.

Then the president calls the meeting to order. He gives his annual address. "So many county meetings held. So much foulbrood area cleaned up. Such and such a law was passed or proposed by our legislative committee." Watts has heard a lot of these annual addresses, and believes that much time could be saved if a form could be gotten up, with appropriate blanks for state and county names, and sold in pads for the use of association presidents.

A Famous Speech

The chairman now introduces Mr. Pasteanscissors, editor of a famous beekeepers' publication, "who has come to bring us a message." We listen to the message. The editor tells us that we are the most intelligent looking beemen it has been his pleasure to see; that our methods of manipulation are a model to the balance of the country, and that our honey producing flora is the envy of the world. We agree with him by vociferous handclapping, and whisper to one another that this is surely the most observant man that has lately come among us.

Next on the program is Professor Dryasdust. He is eulogized by the chairman and we are told what wonders have been accomplished by the work of the Division of Whateveritis, which the professor presides over. Usually a blackboard is provided or a few lantern slides are shown. The learned man drones on. Here and there a beekeeper snoozes in his chair or a restless person shifts about. Otherwise the silence is unbroken. Ten minutes after the lecture Watts asks a fellow member what it was all about, and all the answer he gets is a mumbled, "I dunno."

The Inspector Is Heard

The state (or county) inspector now has his inning. "In Tomkins Parish 1367 colonies were examined, 47 cases of A. F. B. were found, three of which were destroyed and the balance treated. Eighty-three cases E. F. B. were discovered and most of these were ordered requeened." So on for the other 163 districts in the state. We live through it at last; and always (in this no association has ever been known to fail) we give the inspection service a vote of thanks.

After noon the real treat comes. Mr. Honeyman, who has developed a wonderful selling system, or has organized the marketing association on Wrangel Island, is on the program to tell us how to market our honey. The great man goes into details. He shows us his label and tells of his system. He sings platitudes about the channels of trade, the laws of supply and demand, and the duty we owe ourselves to work up a nation-wide demand for honey. When he sits down a committee is usually appointed to devise a plan whereby we can organize a co-operative unit like his. It does about as much as the same committee did which we appointed last year.

There are a few other speakers we always hear from. The agronomist who tells us about clover always gets a glad hand. The entomologist who has discovered the uses of the third hair from the right end of the drone's hind leg is enthusiastically encored. The beekeeper from down Tickville way, who increased eleven colonies to forty-eight and made a 147-pound average from the increase, describes his method of doing it. And then we have the Question Box.

We Tell What We Know

Oh, that Question Box! That is what we have all been hanging around here waiting for. A rustle and a buzz go over the assembly. We hitch forward to the edge of our chairs and breathlessly await the reading of the first query.

"Can combs from a colony which died of A. F. B. be fumigated with a solution of witch-hazel and cedar-bark tea and safely used next spring in making increase?" This is laboriously read out by the secretary.

"Let's see," says the chairman. "We are lucky to have Doctor Sidewhiskers here today. We will ask him to reply to this important question." The doctor replies; and the battle is on. A dozen excited beekeepers try to get up at the same time. Old Man Sawitfirst talks seven times before the next question is read. As each one is propounded the same scene of excitement ensues. Sometimes it is the "control of mating"; sometimes, the "control of swarming"; sometimes, "the reason for requeening;" or, it may be "how to feed," "how to introduce queens," or "how to prepare for winter." It makes no difference what the question is. This question box is what we came to the meeting for, and we are all going to have our say. Even old Watts gets excited and uses up a half hour to tell how he once wintered two or three queens, all in one hive, by gum!

The Big Feed

The last evening we have a banquet. If it happens to be in Texas, they take us to a place and serve us what they call a "Mexican supper," but what tastes like a blast furnace basted with acetylene flames. In Iowa they may let us eat an apple from the original Delicious tree. In Michigan they see that everyone tastes and appreciates milkweed or raspberry honey. In California they cut off and serve each one a generous slice of "climate," suitably garnished with appropriate eulogisms. In Dixie they hash up a concoction called "shrimp-oyster gumbo" which tickles the palate and taxes the digestion. In New York we get apples, also, but this time it will be a Baldwin or an Imperial. There is always something local about the banquet, even though the meetings may have all been more or less alike.

Wit and humor flows for awhile until some beekeeper discovers that a supply-dealer has been elected third vice president, or something like that, for next year. Then the annual row starts. Shall we producers be always robbed in this way? Can the lamb and the lion thus lie down together? Watts believes that this fight has been waged at every meeting ever held. Sometimes the row starts because a man from the state college was elected secretary. Horrors! Shall the high-brows of the university run our association? Never! We pass a few resolutions, declaring our independence, and then happily adjourn and go home. All is peaceful and serene once more.

"You don't seem to think much of these conventions," Watt said.

"On the contrary, I enjoy them very much and wouldn't miss one of them for a honey crop," I aver.

"Well, what do you do when you get home, Watts?"

To tell the truth, I am afraid that most of us cut the price of honey so as to clean up what little of the crop we had left.

When it comes to marketing our honey every beekeeper still insists on paddling his own canoe and seems very promptly to forget that the inexorable laws of commerce apply to honey selling as much as to any other commodity. But the orthodox beeman must have his annual convention. It is a fixed festival and an indispensable institution. These conventions do a great deal of good, too. We get acquainted with one another and we enjoy them. Anything that gives joy and pleasure is a good thing. That's what's what.

Watts Watt.

Robber fly at rest.

ROBBER FLIES

By Frank C. Pellett.

Although there is an occasional reference to robber flies in our beekeeping literature, most beekeepers are unfamiliar with their habits and many fail to recognize the insects. There are many different species of robber flies, which vary in size from less than half an inch to more than two inches in length. They are powerful insects of a very swift flight, which dart through the air like arrows and catch their prey in flight. On the whole they are useful and do far more good than harm. Large numbers of cabbage butterflies, beetles, wasps and other insects fall a prey to these flies. A few species feed largely on the honeybee, and these sometimes become a serious pest in the apiary.

The more common species have long, tapering abdomens and are somewhat wasplike in appearance, except that they are usually thickest near the waist, where the wasp is thin. Some species bear a close resemblance to bumblebees and are easily mistaken for them. All of the robber flies are carnivorous in their food habits and fill the place in the insect world which is taken by the hawks among the birds. To see one suddenly take wing and, dashing through the air, capture a passing insect in flight, one is forcibly reminded of the behavior of the Cooper hawk. They are not so very particular in their taste and it is not uncommon for robber flies to kill others of their own kind. I once knew of a case where two young Cooper hawks killed and ate another from their own nest.

While, as already stated, robber flies greatly assist in keeping down the number of destructive insects, they at times offer a serious problem to the beekeeper. Packard, in his book on insects, quotes Riley to the effect that one bee killer (**Trupenea apivora**) has been known to kill 141 bees in a day. The robber fly, or bee killer, as it is sometimes called, merely stabs the honeybee and sucks out the body juices. The body is then dropped to the ground and the insect goes in search of another victim. In this respect its habits resemble those of the well-known weasel, which catches a small animal or bird by the throat and, after sucking the blood, leaves the body where it lies.

I have been familiar with robber flies for many years, yet never saw them sufficiently common in the northern states to give the beekeeper much concern. In the South, however, they are so much more plentiful that it is quite a different matter. I did not count the number of bees caught by one of these insects, as Riley is reported to have done, but, at the Texas Apicultural Station, was surprised to see how many of them were flying about and how many bees they were catching. They are particularly destructive in the queen-rearing yard, and Mr. Alex and Mr. Park often find it necessary to spend a few hours in the yard swatting the robber flies with paddles. Finding the insects so abundant, at several points in south Texas, it seemed worth while to take photographs showing them at approximately life size and to present them to the readers of the American Bee Journal. The species pictured was identified at College Station as **Deromyea angustipennis**, and seemed to be far more destructive to the honeybees than any other species observed on the trip. It is a two-winged insect, being a true fly belonging to the diptera.

PACKAGE BEES BY MAIL OR EXPRESS

By L. T. Floyd.

Last season we had a chance to add considerably to our experience in this work and I was called many times to look over shipments arriving both by mail and express.

When the postal authorities amended the regulations so eleven pounds of bees could be shipped by parcel post, many were of the opinion that the mails would be likely to carry the bulk of the shipments, but as the season advanced it became apparent that the risk was less by express than by mail.

Shipments from Alabama generally arrived in good condition, and shipments from California were also almost perfect, showing that distance did not make very much difference, but some shipments from Georgia and Florida arrived entirely dead.

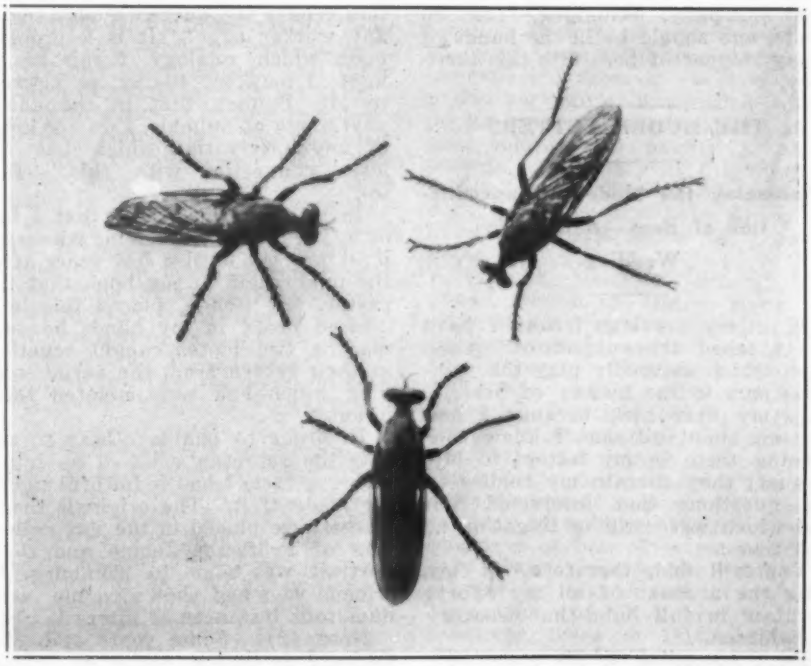
One shipper writes us offering a suggestion that seems worthy of consideration. He states that when the bees are shipped from the extreme South they are in danger of being grouped with heavy shipments of mail that make up a number of carloads, and if the packages are placed in a car and the car filled to the top with mail sacks they are doomed.

This could not occur in an express shipment, as the packages would be of so much lighter build than ordinary goods that the express men would be forced to place them on top in carload lots.

I saw one shipment by mail last season that aroused my curiosity. I enquired of the clerk regarding the address and he informed me that it was routed to a point near Fort Alexander, on Lake Winnipeg.

This shipment would arrive at the end of the rails on Saturday night, after a six days' trip; it could not go out from Lac du Bonnet until Monday, and would then have a day or two to travel by canoe before it would arrive at its destination.

I do not know if the shipper had guaranteed delivery in this case, but if he did he was almost sure to lose.



This species of robber fly is very common in south Texas.

An express company would not have accepted this shipment.

Another was addressed to a point where there was only one mail a week, and it arrived in Winnipeg on that day, so it could not possibly be delivered alive, as part of this shipment was already in poor condition on arrival here and it had another week to travel.

Shippers must not forget that this is a new country. Express agents would not accept perishable shipments for this point, as they would have the information, while the postal clerk would not have. Some hitches in the delivery of express shipments were reported where the shippers had not made themselves conversant with the customs regulations and the proper forms did not accompany the shipments.

There were also some shipments delayed longer than others, and we were informed that when those from the extreme South were shipped by the Southeastern Express they traveled by a longer route than when shipped by the American Railway Express.

The express men were tireless in their efforts to place the deliveries quickly, and their patience in some cases where they called me as late as 10 o'clock at night, long after their office hours, for information regarding parties that could not be located, I cannot pass without comment.

When shipments arrived in poor condition I often counseled with them regarding the report sent in and we tried to be absolutely fair to the shippers in these reports.

Much information can be secured by a little book published in Winnipeg known as "Waghorn's Guide." This contains the names of all the postoffices in western Canada and a time table of all trains. This can be secured from the Guide Publishing Company, Winnipeg, for 20 cents, and should be in the hands of every shipper of bees into this territory.

THE HUBER LETTERS

Concerning the Mode of Reproduction of Bees—A Queen's Wedding.

If in my previous letters I have not touched the subject of queen bees, which assuredly play the principal part in the history of bees, it was, my dear girl, because I had written about all that I knew concerning them in my letters to Mr. Bonnet; they contain my replies to the questions that interested him and which were still in litigation at that time.

You will find, therefore, in my book the account of all my efforts to place in full light the discovery of Schirach.

Bees, according to his statement, to make good the loss of their queen, have only to provide the larvæ which are intended for worker bees with a royal education; that is to say, change the shape, the dimensions and the situation of the cell and of the food to suit the young queen, which without that would have been only a common worker bee and whose sexual organs would not have secured the necessary development. Mr. Bonnet, who did not at first admit the wonder and marvel of the Schirach discovery, finally gave up to the proofs that I felt myself able to give him of the truth of this matter. Some observers, misled by deceiving analogies, asserted that the queen bees were fertile of themselves and were not subjected to the laws imposed upon most of the animals. Numerous experiments taught us that this exception was not a fact, that their matings could not take place within the hive, but only aloft, in the skies. (1)

Note (1). It may be readily understood that Huber could not admit, concerning bees, the principle of parthenogenesis, as some naturalists conceived it at that time; that is to say, procreation without mating (Lucina sine concubita), to the exclusion of the ordinary mode of reproduction by the concourse of the sexes. He had, in fact, ascertained that, among our bees, the mating really took place and that it was followed within a short time with the laying, by the queen, of eggs producing worker bees. But he had also ascertained, by numerous experiments, that when he held the young queen emprisoned in the hive until the 20th to the 23d day, and thus prevented her from mating, she could only lay drone eggs and the explanation of this mystery puzzled him to the end of his life. "But why," said he in one of the numerous notes which he edited on that subject, "why does the delay of fertilization render the queens unable to lay any worker eggs? It is a problem upon which analogy furnishes no light; I may say to-day, as I wrote to Mr. Bonnet, that in the entire physiology of animals, I do not know of any observation which has the least connection with this."—Editor.

In spite of the proofs that I had of it, I regretted not having witnessed it; it was not until a few years after the publication of my book that the pastor, Mr. Gelieu, placed this long desired proof in my hands he sent me the two mates caught together at their return from the aerial wedding which had consummated their union.

In order to enable others to see also the representation of so interesting a fact, I had a faithful painting made of it. The originals themselves were placed in the fine collection of Professor Jurine and their portrait was sent to Edinburg, to friends who had shown to me very numerous instances of interest. (2)

Note (2). Some years ago, Mr. Bernard de Gelieu, pastor at Colombier and son of the author of the "Conservateur des Abeilles," being a beekeeper himself, did us the honor, in spite of his great age, to attend one of the sittings of the Committee of the Societe Romande. Recalling his youthful remembrances, he told us that, at the time when he was studying theology at the Faculty of Geneva, his father had entrusted him with the gift to his friend, Francois Huber, of a mated couple, queen and drone, which a countryman had captured in the vicinity of his apiary. "I already felt," said he, "the great interest that this anatomical sample would present for the author of the "Nouvelles Observations" in the interest of science." (Bulletin de la Suisse Romande, 1879, p. 30.)—Editor.

Miracles With Bees

Sunday Morning, May, 1828.

In order to amuse you at the expense of the bees, I wish to tell you what is narrated (in the beautiful book of Villemain) about St. Ambrose, as about Plato; that while he was sleeping in the cradle, a swarm of bees came and alighted on his face, and that some of them even crept into his partly opened mouth. The nurse was frightened. The father, who was walking about near the child, with his wife and eldest daughter, would not permit them to interrupt this wonder (he did right), and when he saw the swarm rise up into the air, he exclaimed: "That child, if he lives, will be great." This prophecy was certainly accomplished.

In a more recent case, and very similar, the swarm, after having thoroughly frightened the nurse and the child's mother, flew away without having done it the least harm, although some twenty bees had crawled under its swaddling clothes, where they were found, full of life, which proves that they had not stung the little innocent.

Some bees were often found in the bed of another innocent who had the mania of keeping bees in his bedroom and who affirmed that he had never been stung by them.

At the present time, I assure you that I have never been stung by bees myself and that I am not acquainted, except by hearsay, with the harm they can do when they are treated too rudely; which teaches us that it is with gentleness that they must always be treated, if one does not wish to have cause for complaint.

Adieu, kind Elisa; do not fail to mention me to your mother and Sophie, and especially do not worry over your crazy friend and his hobby. You know we must always have one.

A Young Man for His Age

I am close to 70 years old and have about 300 colonies to look after and run about half and half for comb and extracted honey. I do all the work myself, so you see I am busy. I also have a large garden patch to look after while I am resting.

N. E. Brock, Colorado.

ARE PACKAGE BEES SHORT WEIGHT?

By J. H. Merrill, Apiarist,

Kansas State Agricultural College
and Experiment Station.

(* Contribution No. 323 from the Entomological Laboratory, Kansas State Agricultural College. This paper embodies some of the results obtained in the prosecution of project No. 126 of the Agricultural Experiment Station.)

THE practice of shipping bees in combless packages from parts of the country where colonies become strong early in the season has been increasing in popularity of late. Bees are shipped in what are known as one-pound, two-pound and three-pound packages.

The complaint is often heard, and occasionally appears in print, that package bees are short weight. The phrase is usually used by some disgruntled customer to vent his opinion of the business probity of the dealer in package bees. If a customer orders a "three-pound package" of bees, and after their long journey, upon weighing them, he finds there are not three pounds of bees, it is then he has recourse to the phrase "short weight," because he feels that the dealer has been unfair to him.

A statement such as is found in an article by E. Fox in the American Bee Journal, page 517, October, 1923, in which, speaking of "pound packages" shipped from the South, he says, "if weighed at all," is misleading, as the ordinary reader is apt to infer from it that the dealers in package bees are either slipshod or dishonest in their methods.

The Kansas City Experiment Station is conducting a co-operative experiment with the Texas station. In the course of this experiment the bees from several hives are placed in combless packages and shipped back and forth between Texas and Kansas at such times as will enable them to take part in the honey flows in each state. For the purpose of this experiment it is necessary that the number of bees which are sent back and forth be accurately determined. The bees are placed in the required number of packages without attempting to make them of any particular weight, but the weight of each is taken before and after filling with bees. At the receiving end the weights are taken before and after removing the bees from the packages; consequently the decrease in weights between the shipping point and receiving point is ascertained. As this is a perfectly friendly experiment, we do not indulge in any acrimonious correspondence, but rather inform one another, for the purpose of record, just how much each package decreased in weight.

We have purchased a number of packages of bees for the Kansas Experiment Station and have secured them from a man whom we know to be a reliable dealer. We always determine the number of bees that come in each package and usually find that the so-called "three-pound package" does not actually contain three pounds of bees upon its arrival here. We have never felt that this loss in weight was due to any dishonesty on the part of the shipper. We have even received packages accompanied by a letter from him stating that, owing to the conditions under which the packages were filled, each package would be found to contain more than the three pounds of bees which were ordered. As a matter of fact, none of them contained three pounds. The packages were filled during a heavy honey flow, and it seemed as though every bee must have filled its honey stomach before being shaken into the package, but it was not until the Kansas-Texas co-operative experiment was begun that we had an opportunity to secure any data on this shrinkage.

The bees from colonies No. 10, 14, 24, 26 and 28 were each shaken from their combs through a funnel into two three-pound-size, combless packages. The bees from colony No. 10, after being placed in the packages in Kansas and before being fed to prepare them for their journey, weighed four pounds. At the time of liberation in Texas it was found that this package contained only two pounds and ten ounces. Colony No. 14 had in Kansas four pounds, eight ounces, and in Texas three pounds, ten ounces. Colony No. 24 weighed in Kansas five pounds, and in Texas three pounds, fourteen ounces. Colony No. 26 weighed four pounds, twelve ounces in Kansas, and three pounds, nine ounces in Texas. Colony No. 28 weighed six pounds in Kansas and four pounds and fifteen ounces in Texas. It will be seen from these figures that the actual loss was greater in the lighter packages than in the heavier packages, the loss being inversely proportionate to the weight of the bees, as can plainly be seen from the accompanying table:

Colony No. 10—Weight in Kansas, 4 lbs.; weight in Texas, 2 lbs., 10 oz. Loss in weight, 1 lb., 6 oz.

Colony No. 14—Weight in Kansas, 4 lbs., 8 oz.; weight in Texas, 3 lbs., 10 oz. Loss in weight, 1 lb., 4 oz.

Colony No. 26—Weight in Kansas, 4 lbs., 12 oz.; weight in Texas, 3 lbs., 9 oz. Loss in weight, 1 lb., 3 oz.

Colony No. 24—Weight in Kansas, 5 lbs.; weight in Texas, 3 lbs., 14 oz. Loss in weight, 1 lb., 2 oz.

Colony No. 28—Weight in Kansas, 6 lbs.; weight in Texas, 4 lbs., 15 oz. Loss in weight, 1 lb., 1 oz.

As mentioned earlier, the bees from each colony were shipped in two combless packages of the regulation size used when shipping three pounds of bees. Since these colonies varied from four to six pounds, colony No. 26, which contained six pounds of bees, was the only one in which three pounds of bees were actually placed in a three-pound package. The amount of loss seems to be proportionate to the degree of exactness with which the number of bees approach the proper weight for the size of the package. Since in colony No. 10, which had only four pounds of bees, the actual loss was one pound, six ounces, or about 34 per cent. In colony No. 28, in which six pounds of bees were placed in two three-pound packages, the loss was only one pound, one ounce, or 17 2-3 per cent. From this it might be inferred that the bees would ship best in the package that is designed to hold that number.

Colony No. 28 was shipped in two three-pound packages. The total loss in both packages was one pound and one ounce, or an average of eight and one-half ounces for each of the two three-pound packages. The distance between the Kansas Experiment Station and the Texas Experiment Station is sufficiently great to provide the bees with an opportunity of consuming the honey with which they had filled themselves before being shaken into the packages. There should be no marked loss after this honey has been consumed. Hence, if three pounds and nine ounces of bees are put into a shipping package, there should be approximately three pounds of bees when they arrive at their destination.

Bees have been sold in combless packages for a number of years, and the methods for computing the amount of bees which are placed in the packages have remained practically unchanged. Customers have purchased these bees, given them a trial, and published reports of their results. From these reports we have come to learn what may ordinarily be expected from a so-called two-pound package or a so-called three-pound package. Whether these packages contain two pounds or three pounds respectively at the shipping point, or at the final destination, does not alter the data which we have from observation of package bees.

When the housewife orders a one-pound section of honey from the store and it weighs only thirteen or fourteen ounces, she does not accuse the grocer of fraudulent dealings. The grocer carries sections of honey which he advertises to sell at a stated price. In like manner, package bees are offered for sale at a stated price for a stated size package. The ultimate purchaser who secures pound sections of honey or certain sized packages of bees does not in either case always receive the number of pounds and ounces that an exact interpretation of his order called for. However, there is this difference: The pound section of honey probably never did weigh a pound, whereas

the one, two, or three-pound package of bees undoubtedly contained the weight of bees ordered when the package was filled.

How many beekeepers have ever read advertisements in which the shipper guaranteed that the bees in the packages he sold would contain a definite weight upon arriving at their destination? However, this is a matter which can be very easily adjusted between the dealers in bees and the purchasers. When we order from the grocer a pound section of honey and only receive fourteen ounces, we are the ones who have erred, because we have not correctly described the article we wished to purchase. In the same way, when we order a stated size package of bees, if we stipulate in our order that the dealer add enough extra bees so they will weigh a definite amount on their arrival, we will then have placed an exact, understandable order. Co-operative tests between dealers and purchasers will enable the shipper to know how much extra weight will be required, as for instance a package weighing three pounds and nine ounces in Kansas should contain three pounds of bees when arriving in Texas, or vice versa. It has been said that "every knock is a boost, but here is an instance where co-operation will accomplish a great deal more than knocking.

A WORD FOR THE SIDE-OPENING HIVES OF GERMANY

By Dr. Brunnich, of Switzerland.

There is a great tendency to favor the Langstroth system in England and even in certain circles of German apiarists. The latter country is in a desperate situation concerning beekeeping. The country is short of sugar, very little is to be secured by the bee men. That is also the reason why new hives come forth like mushrooms; they believe they will be able to solve the lack of sugar by new systems of hives.

The average of surplus honey produced by German beekeepers from 1884 to 1922 varies between 9 and 43½ pounds per annum, with a total of 19 pounds.

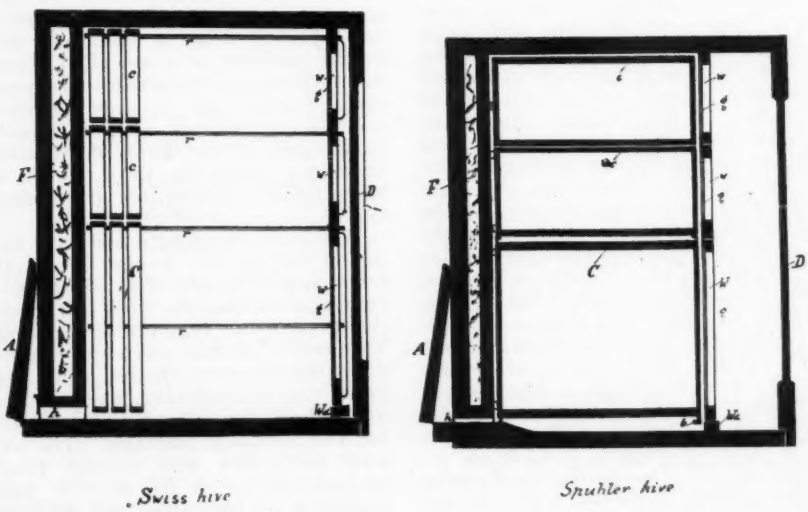
The American beekeeper will be astonished to read of such small profits in beekeeping. Our colonies never have enough for winter, for I can assert that we have in autumn about 11 pounds of provisions per colony. As a colony needs not less than 30 pounds, they generally do not have enough if we give them no feed at all. Of course there are localities which are better favored, but in return there are others that are in a worse situation than the average. When, most of the time, not even one Dadant super can be filled, we cannot be very enthusiastic over the Langstroth equipment. There are still other reasons against this system, which I will mention further on. At all events it is easy to see that we depend very much upon the necessity of feeding sugar to our bees for winter.

We can divide the different styles of hives in use into two main groups —indoor hives and outdoor hives. The first are placed in little bee-houses and piled up, the latter stand separately in the open air. The outdoor hives are represented by the Langstroth management, and with us in Switzerland it is chiefly the Modified Dadant hives which represent this system. These hives are so well known that there is no need of further description.

In most of the indoor hives, the brood-room and the honey-rooms (generally two) are within a closed box, and the management is made from behind. The Berlepsch hive represents the combs standing parallel with the front; the "Swiss hive" and many German systems are samples of this kind. For inspecting the broodnest it is necessary to take away part of the combs with a pair of pincers and place them into a box especially constructed for this purpose. The Alberti hive is the representative of an indoor hive with combs vertical to the front. Here the broodnest and the super are separated by a board with a large hole and the combs stand on iron staffs. It is a disadvantage that the combs of the brood-room and the super be not at all placed near contact. The Spuhler hive avoids this inconvenience, for here the super combs rest at front and rear on iron hooks, while the brood combs rest at both ends on iron feet. The bottom-board it not quite level, being higher in front than behind. This represents an advantage, as when we draw the combs back a little they become lower and the wax-bridges between the two stories are broken so as to free the combs. It is very easy to remove combs, even easier than with the Langstroth system, especially if there are two or three stories. The supers are movable and the brood-room is visited from the rear, where there is a window as in most of the indoor hives.

Now let us compare the two principal schemes—outdoor and indoor hives. The first can always be easily interchanged, which for some purposes is profitable, for only a few of the indoor hives can be thus handled, and never so conveniently. The combs of the Langstroth equipment being visited in the open air, all details are better visible than in a bee-house; however, a bee-house with proper windows is hardly a disadvantage. What I judge the most important point of the Langstroth system is the possibility of piling two or more supers upon the hive when the honey yield is good. It is this point, indeed, which makes the Langstroth system the favored one of our sister republic. Had the Americans indoor hives, they would often be compelled to use the honey extractor almost continuously, sometimes at great loss; because, as friend Dadant said when he visited us in Switzerland, "Time is honey." That is indeed an advantage, and I believe that a more or less constant rich honey crop compels the adoption of the Langstroth system.

Let us now look at the advantages of our despised, clumsy equipment of indoor hives. Oh, there are some, I can assure you! Let me speak first of the general treatment. It is a pleasant thing to be able to visit



Swiss hive Spuhler hive

The side opening hives of Europe.
A. Alighting board, turned up.
B. Iron bar giving support to the Spuhler frame.
C. Brood combs. c honey combs.
D. Door of hive. F. Double front.
G. Glass of windows W. W.
H. Flight hole. Wd. Wedge.
R. Iron rules supporting combs.

your hives at any time of the day, whether the weather is good or whether it is raining in streams. Another important point is that you will find the bees much more gentle at indoor handling than out-of-doors. Besides the colonies in my bee-house, I have four or five outdoors, and I can assure you that the difference is significant. This facilitates the operation of feeding, finding the queen, superseding, etc. Only he who possesses outdoor and indoor hives can realize the great advantages of the latter system in this direction.

A third thing of great value is the absence of any robbing during our manipulations; every beekeeper will appreciate this, I suppose. I dare say those three comforts do far more than balance the advantages of the Langstroth management — for our conditions — as I may emphasize. Therefore, I cannot understand the propaganda which is now made in Germany for the latter system; I suppose that people who do so have never learned the superiority of the indoor management. This does not concern the Americans, because, on account of their rich honey crops, they are compelled to keep top-opening hives.

Another important factor is the question of room. In Germany as well as in Switzerland, a great many beekeepers are persons who possess no soil at all, schoolmasters, clergymen, physicians. For them, it is very difficult to secure the land for isolated hives; even our farmers seldom have so much suitable ground as to be able to locate from 40 to 50 colonies with the Langstroth management. For all these people our bee-houses are very commodious, because it is then an easy thing to locate 40 or 50 hives in a small spot. The question of annoyances by bees plays a role also, for our bee-houses give very little extent to molestation as compared with isolated hives. In this regard, I could tell some grotesque stories concerning the intolerance and stupidity of people concerning bees.

It is certainly very fine to be able to remove a brood comb without touching the others. But let us not forget that, with the Langstroth equipment, this privilege exists only when there are no supers. When there are one or more, the pleasure of taking out combs from the brood chamber is certainly less important. In this case, I prefer even the clumsy Swiss hive to the Dadant, of which system I had for years a sample in my apiary. With the Spuhler hives, I can take any comb out of the brood-room at any time I please. Therefore, it is unquestionable for me that this hive is in all circumstances more convenient than the Langstroth system—**for our conditions.**

There is still another circumstance which makes the indoor hives preferable. In spring, they can be kept warmer than our Dadant or Langstroth hives. This is exceedingly important for us. Our honey yield is exceedingly early. It begins with the cherry bloom at the end of April or beginning of May, when cold spells are frequent. Therefore, an unusual rapid development of the colonies is an absolute necessity. When I possessed a Dadant hive I could observe that this colony was always behind my indoor colonies, and consequently the spring crop was less abundant.

The turning scale of the whole hive question is the **honey-crop,** not only for the **system,** but also, as v. Buttel-Reepen has emphasized, for the size of the **combs.** From what I said regarding how poor our honey crops are as against those of the U. S., everybody will understand that methods which are good in America may give poor results in Europe. The American methods are adapted to their conditions, so are ours to our conditions. But I chiefly wanted to show that our bee industry is not so much in arrears as many people would have us believe, even in our own country.

A SUCCESSFUL OBSERVATION HIVE

By F. B. Paddock.

The Division of Apiculture of the Iowa State College placed an exhibition at the State Fair last year for the first time. A part of this exhibit was an observation hive of bees. Probably more attention was attracted to this than to the exhibit of any other single department. A study of the results has given some practical applications.

For a good many years, an observation hive had proved very attractive to crowds of people. However, it has been exceedingly difficult to keep the bees in anything like normal condition, largely because it has been seemingly impossible to provide them with an exit.

It was felt from the beginning this year that the success of an observation hive would depend upon an exit for the bees in such a location that they would not interfere with the crowd. Accordingly, a tunnel was constructed out of ⅜-inch lumber. This tunnel had an inside dimension of ¾ of an inch by 1½ inches. The tunnel was composed of two major sections, one 8 feet long and one 12 feet long. There were two short connecting sections, each 1 foot long. This allowed an exit outside the building and above the crowd. The exit was marked by a small board 6x6 inches, and half of this board was painted a deep blue color.

It is interesting how quickly the bees established themselves after the observation hive was installed in the exhibit. During most of the days of the fair, they were engaged in bringing in pollen, an interesting sight to the novice. There were a good many people who were skeptical as to the ability of the bees to follow through the tunnel, and they had to be shown that the bees were actually going and coming from the outside.

In addition to the value of this tunnel for an educational exhibit, there is also another possible value. In most State Fair premium lists there is an entry for an observation hive of bees. This is a rather difficult entry to prepare. A case came to my attention three years ago where a frame of brood was taken from a hive and transported in an auto for two days before being installed at the fair. The appearance of the brood was such that several expressed the opinion that the frame had been taken from a colony suffering from European foulbrood. Some of the contestants asked that this exhibit be debarred on account of the disease. The owner states positively that there was no disease in any of his colonies before or since this experience.

It is usually difficult to keep the observation hives under anything like natural conditions, first, because the bees are confined, and, second, because the temperature is always excessive around the bees.

At the State Fair there were five entries in observation hives, all of which were one week old when it was possible to judge them. In one case the brood was being dragged from the cells, and in another case all of the stores were consumed. In all of the hives there were relatively large numbers of dead bees on the bottom-board. No observation hive can be expected to score high under these conditions. Would it not be possible, then, for the various entries to have a tunnel constructed which would provide an exit for each observation hive? As the Apiary Department is located at the Iowa State Fair, this would be an easy matter and would require a shorter tunnel than the one described above, as used in the education observation hive.

The visitors at the Iowa State Fair who see the observation hives as they have been presented in the past, gain the impression that bees are engaged in an incessant whirl within the hive. It is not possible to conceive the orderly conduct of the hive labors when watching one of the observation hives without an exit. In the educational exhibit, all of the work of the hive was being conducted in an orderly, systematic manner, and thousands of people saw for the first time the real behavior of the inside of a bee colony.

Ames, Iowa.

Entomologists Meet

An enthusiastic meeting of the apiary section of the Economic Entomologists is reported from Cincinnati. About 35 of the bug men were present and devoted one session to boosting for beekeeping. Prof. R. W. Harned, of Mississippi, was elected chairman of the section and Prof. G. M. Bentley was re-elected secretary. The next meeting will be held at Washington.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

GRANULATED HONEY

Last year I saved 4 supers of honey in extracting frames and 2 sets of 10 brood frames to fall back on for spring feeding in outapiary, but did not need any of it.

As it was granulated more or less I could not extract it, but this summer, I guess, what was not sealed or granulated turned sour. Please let me know if there is any way that I can make use of this honey, or at least save the combs, as these frames are wired and full sheets of foundation.

NEBRASKA.

Answer.—If the honey is granulated, it is out of the question to extract it in the usual way. The only two things you can do are:

1. Give the combs to colonies of bees in spring, when they need plenty of honey. They will take it all out. Perhaps putting it near the stove for a few weeks may help soften it so that even the granulated particles may be used up. We have often fed granulated honey to bees, in spring, when they can get water, and have never seen any of it wasted. Sour honey, then, will not hurt them.

2. The other way is to melt up combs and all. But this will not answer your purpose, since you wish to save the combs.

WINTERING OR PACKAGES?

What information is there available as to the advisability of killing the bees in the fall, extracting the honey, and shipping in package bees in the spring and feeding them sugar syrup?

What size package would be best.

How go about it to kill the bees?

Is it economical in extracted honey production? WISCONSIN.

Answer.—This novel idea of killing the bees, in the North, to buy package bees again in spring does not suit me at all.

If you wish to try it, go slowly, and do not try it on a large number of colonies. I can see many possible disadvantages. The only possible advantage would be if you had foulbrood in your apiary. But if your bees are healthy you do not know but what you will be trading health for disease, when you buy stock far away, besides the risk of transportation and the reliance you must put upon a stranger.

TRANSFERRING—METAL COVERS, ETC.

1. How is the best way to transfer bees from standard eight and ten-frame hives to the Modified Dadant hives?
2. Why is a metal roof-cover used? It seems to me that this cover would make the hives too hot in summer.
3. Is it desirable to use an extra super of honey on brood chamber with the Modified Dadant hive in winter?
4. What is the Demaree system to prevent swarming?
5. Where can the straw mats mentioned in the Dadant system be purchased? Dealers do not keep them in this vicinity.

WASHINGTON.

Answers.—1. You may transfer them by cutting the combs out of the L-frame hive and putting them in the Modified frames, with a strip of foundation at the top. Use the wires with bent ends, such as are described in the Honeybee," paragraph 578. These wires are better than twine, which some people use.

If you do not like this method, you may transfer by a slower process by placing the L-frame hive on top of a D hive, with queen excluder between, after having placed the queen below on foundation or combs already built. In three weeks the brood will be all hatched out of the upper story and you may do what you please with it. However, this cannot be done until warm weather.

2. A metal roof cover will not be too hot, if it is in the shade, or shaded by a wooden roof. Personally, I prefer wood altogether, but our young people are following the fashion.

3. No. We find the ordinary brood chamber of the M. D. hive ample for honey, if the bees have filled the room above the brood with honey, but in some seasons it is necessary to crowd for room a little near the end of the season, if they have plenty of empty combs in the supers above. If you are producing comb honey, they will store plenty of honey below.

4. The Demaree system of swarm control was originally given in the A. B. J. April 21, 1892. It was lately mentioned by Wallace Park, page 204 of the May, 1922, number. It consists in removing all the brood combs from the brood chamber, except the one on which the queen is found, and placing them in an upper story, removed at least by one empty super from the brood chamber containing the queen. A queen excluder is placed above the lower brood chambed. Usually this prevents swarming. The answer to the first of these questions is a fair method of Demaree swarm prevention.

5. We used to make the straw mats for sale; but there is no demand for them. We could furnish you a sample for about 50 cents, postage extra, and you could then have them made at home. You will also find directions for making them in "The Honeybee," paragraph 352. They are easily made.

WILD LILAC

Is wild lilac (Ceanothus) a honey plant? These trees grow here in Mendocino County in three different species and cover thousands of acres. My single beehive produced over 150 pounds of honey. If bees were more numerous a person would certainly find bees on them, provided it is a honey plant. It must surely be a great pollen plant.

CALIFORNIA.

Answer.—The book "American Honey Plants" has this to say about Ceanothus, or mountain lilac:

"There are several species of mountain lilac common to California and the western states. They are closely related to the buckthorns. New Jersey tea belongs to this group.

"Jepson lists fourteen species of Ceanothus, common to California. They are shrubs or small trees with small but showy flowers, borne in umbels or panicles. The California species are mostly evergreens. They are known by various names, such as deer-brush, California lilac, mountain lilac, etc. One species is called buck-brush.

"Some species are common to the Mountain States from Wyoming and Colorado to Arizona and Texas. Both honey and pollen are secured from this source, though there are probably not many places where surplus yields may be expected."

I do not know of any other statements concerning this shrub. If you can secure more, we will be glad to hear from you.

PREVENTION OF GRANULATION

I bottle a part of my honey crop for the grocery trade. I heat the same to 160 degrees to prevent granulating, and up until this season it has been all right. But this season it granulates even at that, and I have had to take some out and replace it within ten days after it was put up. Can you tell me any way by which I could keep it from granulating?

NEW YORK.

Answer.—I have never had the trouble which you mention. It may be necessary to keep the honey hot a little longer.

This method of trying hard to prevent honey from granulating, and being ashamed of it when it granulates, is going to be troublesome to the American beekeeper until he insists with his customers on the fact that pure honey always granulates in cold weather, and educates his customers upon the advisability of their melting it themselves when they want it liquid, convincing them that granulation is an evidence of purity. There is no reason why the American consumer cannot learn that fact, since all honey consumers are acquainted with it in Europe. It was our bee-tree strained honey of sixty years ago that got the consumer in the notion that honey is not good when it is granulated. You should at least get that in the mind of your retailer. He should get acquainted with the facts.

A PUZZLE

Here's a question which I haven't been able to get answered. A year ago last August I picked up a swarm of bees rather strong and hived them on foundation except for two or three combs. Being aware of a scarcity of nectar just at that time and also because of presence of worms in a couple of hive bodies of frames nearly solid with honey I placed on the hive a queen excluder and then the two bodies of honey.

A week or so later I looked through the upper bodies to see if they were using any of the honey and found a patch of brood in one side of one frame in the hive body next the brood chamber. The patch wasn't much bigger than a square inch and bulged so much that I supposed them to be drones, of course. I looked down in the brood chamber then and found that the queen had two or three frames of brood and was no drone-layer, either. I then closed the hive, leaving the supers above the excluder as before. About a week later, I looked at the drone brood again and found, not drones, but worker bees emerging, and in all the cappings I opened, were workers, also.

Now, did the queen go through the excluder, lay the eggs, then go back down through the excluder and start laying, or did the bees carry the eggs up? Or did the eggs remain in the hive bodies after removal from the previous hive three or four weeks earlier? In that case they had been in the house for a week or so. OHIO.

Answer.—This is guess work, and your

guess is as good as mine. However, as I have no belief at all in the removal of eggs by the bees from one story to another, and as it looks quite dubious that eggs would have been preserved 3 or 4 weeks, the probability is that the queen found a defective place in the excluder, went up into the upper story, laid a few eggs, then found the same defective place in the excluder to go back down. The entire performance may not have taken more than a half hour.

If that guess is not good, it is anybody's turn next; who can do better?

WINTER FEED

Please tell me how to make winter bee candy. My bees are short on honey.
MASSACHUSETTS.

Answer.—To make candy for bee feed: Add water to sugar and boil slowly until all the water is evaporated. Stir constantly, so that it will not burn. To know when it is done, dip your finger first in cold water and then into the syrup. If what adheres is brittle to the teeth, it is boiled enough. Pour it into shallow pans, a little greased, or upon greased paper, and when it is cold break into pieces of suitable size. If you mark the cake with square cross lines, it will break into more regular shape.

RESTLESS BEES IN CELLAR

Please advise me what ails my neighbor's bees. He has one hive in apparent good condition, put in cellar about November 15, with bottom board on and screen over the wide open entrance. Since being in cellar the bees are very uneasy and noisy, trying continually to get out, and many are dead in the cage. Temperature of cellar varies little from 40 degrees and it is kept dark.
SOUTH DAKOTA.

Answer.—We wintered bees in cellars for 18 years and never at any time used screens or cages over the entrances. A few bees get restless, but it is of no use to confine them, as they only disturb the others. When they are in the dark, they are more likely to remain quiet than when they are in the light.

The temperature of 40 degrees is too low, in our experience. We figured that about 45 was right. Dr. Phillips, after his experiments and those of Demuth, asserts that it is still better nearer 50 degrees. A little depends upon the amount of moisture, as bees in a damp room can stand more heat than in a dry room.

Let your neighbor try to take away the screen and keep the hive in complete darkness with the temperature a little higher. That is the best advice I can offer.

SWEET CLOVER

I am thinking of growing Hubam clover for seed and for bee pasture. I would like to know what yield of seed might be expected per acre, and will the seed planted in the spring mature a crop of ripe seed in the fall?

This might seem a peculiar question to ask, but here at Burley we are at about 43 degrees latitude and 4200 feet altitude, which makes a short growing season. We can grow special varieties of corn successfully.

Alsike, red and white clover are grown quite successfully here, and Idaho seed, I understand, is in demand for its high quality. I had an idea that the same might be done along the Hubam sweet clover line.

The biennial sweet clover is abundant along ditch banks, and does well. Our soil has all the mineral elements necessary for the production of maximum crops, but in the new state it is shy on nitrogen. We have been getting this by growing alfalfa, which has produced wonderful results. Owing to our distance from market, we must produce a seed crop of high value, potatoes or sugar beets, to make the farm pay. If I can put the nitrogen in the soil with a one-year rotation of Hubam and then potatoes, following with Hubam again, I have materially increased the revenue from my farm and incidentally increased my honey crop.

Alfalfa has failed to yield honey this year, and what little honey we will get is almost entirely from sweet clover. I think we will get about 10 to 15 pounds to the colony, instead of our usual 80 to 100 pounds.
IDAHO.

Answer.—Our experience with Hubam is still limited. But from what our people have seen, the yield of seed varies between two and ten bushels per acre, with perhaps an average of five bushels.

If sown early, the Hubam does not bloom much later than the biennial white, but it continues later in the season. The difference in elevation above seas (we are only 600 feet above the Gulf of Mexico, here), would probably cause a difference in results. But I cannot advise you of doing less than giving the Hubam a trial on an acre or two to begin with. You have certainly a wonderful honey-yielding country, if your average is usually 80 pounds per colony.

WINTERING—MATING, ETC.

1. Should the metal cover be used, or just the inner cover, when wintering the bees in the cellar in tiers?
2. How many sections of comb honey would I get if I could get 200 pounds of extracted honey when running for extracted honey?
3. If a pure three-banded Italian queen mated with a pure three-banded Italian drone, would the drones from this queen be three-banded also?
4. If the temperature in the cellar is 48 degrees F., is this too warm for the bees?
MINNESOTA.

Answers.—1. When wintering bees in the cellar, we do not use anything but a light gunny cloth over the combs, just enough to protect the bees in that colony from being drawn to the light, if there is any. We believe that they winter better in that way than when they are enclosed. There is less moulding of combs.

2. The number of sections that may be secured where you would secure 200 pounds of extracted honey is variable. It depends upon whether your bees have combs for extracting, from previous years, or whether they have to build their combs. It also depends upon whether you give them comb foundation in full sheets in the sections when running for comb honey. A little depends, also, upon how hot the weather is, as bees build comb more readily when the weather is warm. But if we take the extracting from already built combs and make the bees in the sections build all their combs, I believe that the quantity of extracted honey will be double that of comb. In other words, I believe we can produce extracted honey for 15 cents per pound, when we expect 30 cents for comb honey.

3. Drones are irregular in color, so we cannot depend upon their looks, but it was long ago proved that the drones of a pure queen will be pure also, even if she is mismated.

4. We keep the temperature of a bee cellar between 42 degrees and 48 degrees. So 48 degrees is fully warm enough. But the best way is to keep a thermometer in the cellar and keep the bees at the degree at which they are the quietest, whether 42 or 48 degrees or anywhere between these points. The more moist your cellar is, the warmer the temperature may be.

RESTLESS BEES

I have eighteen hives and keep them in a dark cellar; the temperature is about right, and I have two colonies that were very strong in the fall, but are noisy and restless and always trying to get out; had to screen them in, and more than a gallon of bees have died already. I have looked in them and can see no moths or anything that I think would bother them, and they have lots of honey. One of the colonies has some brood in it. Is that common for this time of the year? Please tell me what to do.
WISCONSIN.

Answer.—As a rule, we found that when bees are restless in the cellar it is because they are either too warm or too cold. If too warm, they try to go out at the least opportunity of light. If too cold, they have to produce heat, and bestir themselves for this purpose, as has been shown by the wintering experiments of Dr. Phillips and Mr. Demuth. But those very strong colonies must be too warm.

Your best plan is to increase the temperature or lower it. If an increase of temperature makes them more restless, then it is probable that they need a lowering of it, below the present condition. If you use a thermometer, you will find that below 42 degrees will not do, neither will above 50 degrees. Some point between those two is right. Try it, if possible, and hold the temperature at the point where they are the quietest.

On the other hand, a colony that is rearing brood will be much more difficult to quiet down, because they need water, to breed. If you give it to them in any quantity, you will tend to encourage the breeding and it will increase their restlessness, making what is called "a vicious circle." You might try to give a little water to that colony and see the result. But do not give water at all to colonies that are quiet. Water is good only to help the breeding and to liquefy granulated honey or candy. But we have wintered colonies all right on soft candy without water.

It will not do to confine them to the hive with screens, for the restless bees will disturb the others and cause more loss.

PACKAGE BEES

1. I am thinking of sending for package bees. Which would be better, two or three-pound packages?
2. I have four colonies of bees. How many packages could I use giving them brood when they arrive, and about what time should I receive them?
MICHIGAN.

Answers.—1. The larger packages are always best, and I believe that they are the cheapest in the long run.

2. This question is difficult to answer, because I do not know in what condition your colonies will be in spring.

As a rule, taking away brood from a middling strength colony to give to a pound package is simply uncovering one to cover another. Unless your colonies are exceedingly strong in spring, I would not recommend giving three-pound packages more than a comb or so each, of brood. Neither can I give a very definite answer concerning the time when you should receive them. I would aim to have them arrive about the time of fruit bloom. I believe the spring is earlier with you than it is with us, owing to the vicinity of Lake Michigan; so that you could probably get them earlier than we would here. If they can find pollen, you can readily feed them, if there is no honey in the field. Better have them too early than too late, in early May rather than late in the same month. But I repeat it, this advice must be taken according to locality.

BEARS IN BEEYARD

By J. W. Winson.

The bear is a beeman with prior rights, for he probably climbed trees to steal honey long before man did. He has had generations of practice in the profession, but he remains a clumsy bungler at the job. He still may be cleverer in finding a bee tree, and in clinging, to gouge out an opening in the decaying wood while the bees make pointed objections, but as a help in an apiary he is an utter failure. In fact, a mule in an egg exchange, a cow in a garden or a steer in a drawing-room is a mild diversion compared with a bear in a beeyard.

A foraging bear party came to the out apiary of W. H. Turnbull at Colebrook, near Boundary Bay, British Columbia. The week following he was to take off the crop. This was one of the few yards in the Fraser Valley that had done well this season—until the bears found it.

From circumstantial evidence, it is assumed that the Bruinic discoverer had been piloting two black cubs through the summer and they still allowed her to lead in all mischief.

She selected a corner of double-storied tens and apparently extracted one hive completely before demolishing the next.

The hives were lifted, hugged, and carried a few yards before being dropped and "shaken." The frames were carried in the bush and were there licked by the crowd with more leisure and comfort than the infuriated beeyard provided. In this manner nine hives were destroyed in succeeding nights.

Along the well-padded trail one hundred and fifty frames—or their remains—were picked up, all of them having contained some honey, many being capped to the corners. Judging from their condition and in comparison with the contents of the other hives, between 700 and 800 pounds of honey had been taken before the owner came on the scene, though much of this, of course, had been recovered by robbing bees. A few handfuls of the ravished occupants clung wherever two combs lay together, and four queens were recovered. What other bees escaped found homes in the remaining hives.

It was Friday when the owner came on the scene. That night he and a friend sat up nursing rifles. A Chinaman armed with a flashlight was to help by "sighting" the robber for the shot. The first sounds heard were crackling and grumblings as the bears turned over the frames they had picked the evening before. This was enough for John, who dropped the flashlight with celestial wisdom. "Him comin', me goin' home!" The bears did not come into the open that evening.

An experienced bear hunter took vigil on Saturday night. He had the thrill of seeing the bear pick up a two-storied hive, hug it in her "arms" and turn to the woods. The moon unkindly veiled her face at the time and his five shots lacked the full satisfaction he hoped for, as the bear dropped the honey, but went away whining.

On Sunday ten red-shirted gunmen collected and scoured the woods with as many dogs. The dogs enjoyed running the deer and pheasants and could not be kept on the bear trails. Only one had experience with bears, and he came out of the swamp two hours later, limping, a swelling on his hip showing where he had been "slapped."

A bear trap was set on Monday and the area all about posted up with notices of it, as the law demands.

Of course the bear could not read, so walked into treachery on Wednesday evening. She resented this expression of hospitality so much that she gnawed off her paw rather than stay, and the claws are the only items on the credit side of the owner.

Bears are thought to be increasing here, although this is the most populous valley in British Columbia and its biggest centre for the production of honey. Pig pens have been visited, pork and honey being the two foods of the white man which the black bear most enjoys.

Beeyard wrecked by a bear.

THE SPREAD OF HONEY PRICES

E. G. LeStourgeon.

Somewhere I remember having read that one must repeat a statement of fact for more than a half dozen times before the average person grasps its significance. A realization of the truth of this assertion was brought home to me when I read the article on page 597 of the December American Bee Journal written by Mr. A. F. Mead. The article by Mr. Mead proves that he absolutely did not understand what I have tried to say so often, which is, that, **whenever a producer does the work of an assembler, a jobber, a wholesaler or a retailer, in addition to his wages as producer he should also receive the wages that would have been earned by these other agencies of trade.**

Mr. Mead charges that I have "asked the producers to stick together and sell their 20-cent honey for 10 cents in order to protect the wholesaler and the retailer have to tailer." Mr. Mead is wrong. He reverses the proposition. What I said was that he should sell his **10-cent honey at 20 cents per pound if he gave the service of a retailer.** I said that the producer who sold at wholesale and at retail should protect the jobber and the retailer, by getting as much for the product as the wholesaler and the retailer have to get. I do not want any producer to sell his honey for 10 cents a pound if he can possibly work up a local trade on it and sell it at retail for 20 cents a pound. No jobber nor any retailer will complain of a producer who, being a producer and acting as a merchant, demands the wages of a merchant **in addition to his wages as a producer.**

Mr. Mead presents an example which absolutely proves the point that I am trying to make. He says that a certain lot of apples are reasonably worth $1.00 per bushel, to the producer, when sold in quantities of two to ten bushels. These figures are given in his example. He says that a retailer selling these by the pound must ask 5 cents per pound for them. He asked the question now, whether or not the farmer should also get 5 cents a pound, or $2.50 per bushel, for the apples? Assuredly he should do so if he sells them by the single pound and has to weigh up, and wrap, and give service, and delivery, and pay for light, heat and rent and storage and insurance charges, in order to make possible the selling of a single pound of apples. If the farmer sold his apples by the single pound and had to make fifty sales in order to dispose of a bushel of apples, he should certainly get the same price for his service that the retailer does. But if he sold in the two to ten bushel lots that were suggested by Mr. Mead, he should only get $1.00 per bushel, which was the reasonable wholesale price of the apples, according to Mr. Mead himself. In other words, $1.00 was the price of the apples and was

a satisfactory price to the producer for his services as producer. The $1.50 difference was the wages of the retailer and was the payment for his services as retailer.

Whenever the producer also performs the function of the merchant he should, in addition to his wages as producer, receive the reasonable wages of the merchant. This is the fact which I am trying to emphasize.

Producers of all kinds should work up a local demand and a local trade on their product. But, they should sell their product to the consumer at such a difference in price between the bulk price to the producer, which difference in price should be sufficient to leave a reasonable spread or margin as wages for the services of the trade agencies. Beekeepers must learn this lesson before honey will be a staple article of commerce.

Heavy Spring Losses

Three-fourths of the bees in Salt Lake County, Utah, died last May, partly owing to an unfavorable winter and a decidedly backward spring, according to the report of D. H. Hillman, state apiarist. The inspector submits that probably smelter fumes aided in depleting the weakened colonies. The larger part of those now alive did not build up sufficiently to store honey for the winter supply, and a further loss may be expected. Samples of dead and dying bees were submitted to the state chemist and were found to contain arsenic. One sample from a Salt Lake County apiary was sent to Washington for a disease test. None was found.

Lehi and American Fork also lost heavily during May from apparently the same cause. Counties in the southern part of the state are without disease.

Bee owners in San Juan County have signed a petition asking for a county bee inspector. So far no action has been taken on their petition. Davis County is also without an inspector and the county commissioners have been asked to appoint one.

A serious outbreak of foulbrood was reported at Beaver, Utah, and as a consequence it was found necessary to treat 571 colonies. The source of infection was traced to an accumulation of diseased combs in a cellar.

The Utah State Agricultural Bureau issued 1102 bee licenses in 1923.

Honey Stopped from Shipment

Two thousand cans of honey shipped from the "reservation" were held up by an order of the State Food Inspector at Price, Utah, because the honey producers had failed to comply with the state law in not having the honey cans properly labeled, showing the name of the producer and the place of production, contents, etc. It looks as though the producers will be compelled to have proper labels printed and attached to each of the 2000 cans of honey before shipment can be made.

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Later, we can supply queens and bees of our own strain of Carniolans—12 years selection and breeding; **JAN STRGAR, CARNIOLA, EUROPE strain.** These bees have won 64 prizes in Europe. Breeders imported 1923. **ITALIAN, C. B. Hamilton strain.** The mother of this breeder produced 577 finished sections of comb honey.

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Additional frames of brood, or additional pounds of field bees to make larger package, $1.00 each, respectively, in above packages. Bees and queens, Italians. Special discounts given to schools, colleges and church organizations. Queen introduced and laying enroute to you. Health certificate attached. Safe arrival and satisfaction guaranteed. One-fifth cash books order. Send for circular and names of satisfied customers in your state. Complete references given.

JES DALTON,
Bordelonville, La.

SIDE LIGHTS ON THE PACKAGE BUSINESS

By Jes Dalton.

On page 572 of the November issue, Mr. H. Pearson tells us that four package shippers out of five answered his inquiry for bees, as though he was a "yellow dog and deserved a kick." To begin with, most inquirers for package bees want them on combs, and shippers get tired of explaining that bees on combs are not allowed in the mail. Again, shipping by mail is conceded to be only an experiment, and shippers have poor taste for experimenting. Experimenting means work, and getting worked. Last spring a Superintendent of an Agricultural School wrote me for a package, for experimental purposes, inclosing half price. I promptly shipped it, and sure enough, he kept me posted on its progress all summer and sent in a full report this fall, and requested another package. A secretary of a State Beekeepers' Association wrote for an experimental package, tendering in payment a nice set of blanks to be jointly filled, as the season progressed. I bit, shipped out a No. 1 package and have never heard a line since, not even acknowledging receipt of the bees. I wonder how many shippers sent this co-operator a gratis package. One spring I received a very flattering letter from a wonderful farm paper, that had heard of my wonderful bees, and my ability to deliver them, and they confidentially offered me space in several issues of their paper in exchange for a package of bees, mainly to introduce my bees to their readers. I bit again, and when their paper came I thought it was a Directory of Southern Shippers, but at a second glance I saw it was just a list of the suckers among them, and "Lo, Jes Dalton's name led all the rest." The only consolation was that some of the most prominent queen breeders had bit as well as I.

Another "wisher" writes and offers the use of a wonderful breeding queen, if I will ship him some cheap packages; another one wishes to swap a saw-mill slightly used, for bees delivered in Illinois; but worse yet, in looking over a rival shipper's files with a view to taking over his business, I find some of my worst customers, with their same old kicks, and some that had worked us both out of good bargains. One even offered to draw letterheads for us both, at the same time, with map of Louisiana in both of them. I was ahead again. My rival had sent in his design. This was not to come free, but almost, in exchange for some cheap packages from both of us. Cheap packages seem to be all the go. Even Pellett, in his Texas article, makes that stipulation, in his advice to us to substitute bees for strong honey in our shipments to the North. Pearson says, page 572: "Mr. Latham rubbed the buyer pretty hard." In which paragraph? About the free correspondence course in beekeeping?

One fellow writes a couple of letters, and orders a package of bees, and immediately complains to the American Bee Journal that I do not send out complete instructions with the bees, and that he lost a package last year because of that. (I had never heard of him before). More writing and submitting of file copies all around, and the first warm day, card after card, wondering why the bees do not come. They go, and back comes a filled out "bad order form" for a loss of one hundred bees, signed by express agent, with a request for replacement, and for advice on spray repellant, to keep bees from getting killed in spraying. Advice goes and a request comes for a repellant for bees from his body, and remedy for bee-sting poison. These things pouring in, mornings when good-sized orders are due out, cause shippers to "see red" and might cause sharp letters to go out or some that would sound that way because of brevity and bluntness.

The cages, Mr. Latham, the experimental ones, are not out on the lawn killing grass, but on a shelf in the bedroom. I mean to send you some more experimental packages, this spring, if rain does not come down too much nor floods get too high, but I mean to cut that tight bottom off, and cover with screen wire. I sent Dadants one of those regular ones last spring, and when Pellett was down, Cale had him looking for the holes in all my hats, for the ears to go through, for a jackass that would ship out bees in summer in that tight package and expect to deliver them alive. The buyers, and shippers, both have kicks coming, as in any undeveloped business; but the buyers have the best of it. I have been on both ends of the road and traveled the middle.

SPREAD OF HONEY PRICES

By W. E. Joor.

In the November American Bee Journal, Mr. A. F. Mead jumps on our friend E. G. LeStourgeon regarding his October article on the spread of honey prices. Mr. Mead shows the same lack of appreciation of the conditions that have been the worst handicap to the producer in getting a good price for his honey. If I may be pardoned for coming into the discussion, I will try to show Mr. Mead and others the fallacy of their reasoning.

In the first place, Mr. LeStourgeon does not want a producer to sell 20-cent honey for 10 cents unless it cannot be sold except through a broker or other intermediary. What he asks us to do is to sell 20-cent honey for 20 cents to the consumer, or 14 cents to the retailer, or 10 cents to the broker. In other words, sell direct to the consumer for 20 cents if you can, but if the consumers do not take it all, then do

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies

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W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.

"Where the BEST Beehives come from"

not expect the retailer to pay you the same price he must sell for to the consumer; and remember, in selling to the consumer, fix the price the retailer must meet. If you sell for 18 cents to the consumer, then so must the grocer, and he cannot pay you that much nor as much as if you had sold for 20 cents to the consumer.

It is desirable to sell direct to the consumer if it can be done, but do not cut the grocer's price to do it. It will pay in the long run to take less from the grocer than you do from the consumer, if you have to cut the grocer's price to sell to the consumer.

May I illustrate? The grocer's price in a given quantity to the consumer may be 20 cents. In order to sell yours, you sell to the consumer for 18 cents (which is more than the grocer will pay you). There is, say, a surplus in California. They ask the grocer to buy it. He offers them 13 cents (based on your 18-cent price) and sells it at 18. To meet this you drop to 16 cents to the consumer. That may disgust the grocer and he may refuse to handle honey from California (and thus fail to supply a portion of the consumers). To make him buy, California again cuts generously to 10 cents. The grocer is tempted to plunge—buys and retails it at, say, 15 cents, which is below your second price of 16 cents. To meet this you must drop your price to 13 cents, which is less than you could have secured from the grocer who would have sold your honey, and more honey would have been disposed of, and no ill will developed because you did not protect the grocer's price.

In Mr. Mead's illustration of the apples, he also shows a misunderstanding of the situation. His grocer buys two bushels at $1.00 and doles this out in 5-cent packages at $2.50. That is no reason his apple man must insist on that price for a sale of ten bushels to another purchaser. But if that other wanted one pound he should charge 5 cents for it, the same as the grocer did. Is it not plain that the quantity sold has much to do with the price? If you sell to consumers in retailers' package and quantity, charge not less than the retail price; if in wholesale quantity, not less than the wholesale price; if in brokers' quantities, charge not less than the brokerage price.

Mr. Mead asks if he shall charge 48 cents per pound to protect the grocer, who sells five-ounce glasses for 15 cents. The answer is, **yes**, if he sells it in single five-ounce glass packages. If he sells in case lots of these packages or in larger quantities, then the answer is **no**, and the price should be regulated by the quantity that he does sell to any single purchaser.

It is not a question of distance to market, and we are only obliged to be sure to sell our 20-cent honey for 10 cents if in brokers' quantities, or 14 cents in wholesale quantities, and not less than 20 cents in retail quantities.

I have tried to show how cutting these prices will react on one's own market, and be sure no one asks anyone to refuse to sell at retail prices. By all means sell direct to the consumer if you can, but be sure it is at retail price or price to suit the quantity sold. The retail stores would handle very much more honey if it were not for price cutting by the producers, when selling to the consumer.

Dallas, Texas.

Wisconsin Convention

Marketing was the principal subject discussed at this year's convention held by Wisconsin beemen at Milwaukee on December 6 and 7. Most of the papers were related to marketing in some of its phases, including packing of the honey, transportation and selling. The Wisconsin association is working hard to solve the selling problems of its members, as will be seen by the account of the Honey Week campaign told by the secretary, Miss Fischer..

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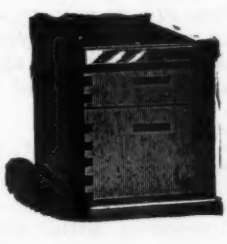

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IS IT THE BEES OR THE QUEEN?

By J. F. Diemer.

If I was asked, What is the easiest thing for me to do in connection with beekeeping? I would say introducing queens, although Jay Smith, E. M. Cole and a host of others would have us believe that it was an awful undertaking. I don't pretend to know all about bees, but I hope that I know as much as one of our supreme judges, who said he knew all about bees, but his bees all died and he quit. Anything can be done, and done easily, if we only know how. The knowing how to get bees to accept a strange queen has been my hobby for over thirty years. It has been thoroughly proven to me, by the bees themselves, that the queen has absolutely nothing to do with it. She may be crippled, blind in one eye, deformed, crooked, a drone layer or a virgin, and the bees will accept her if they are in need of a queen and in the right condition.

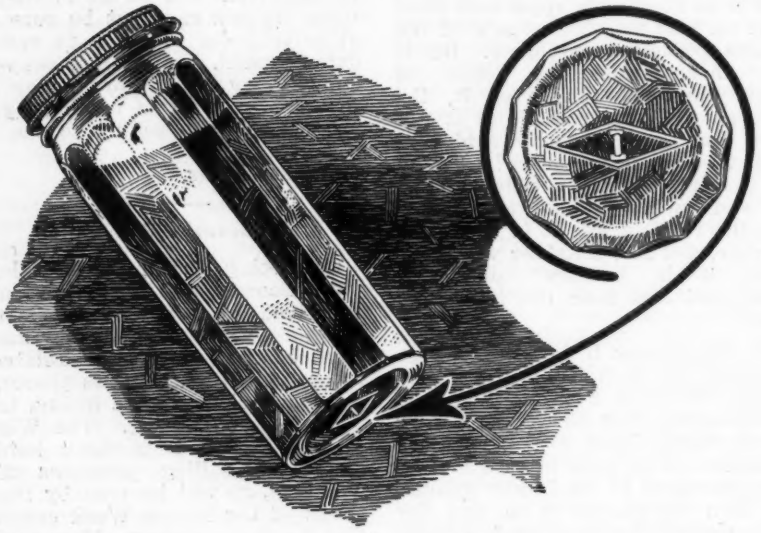
Too much has been said about the condition of the queen and her actions, and not enough about the bees and their condition. This, to my way of looking at it, misleads the ones who have not given much thought to this question, which has been discussed in a way that lays nearly all the blame on the queen. But a thorough investigation has proven to me that it is never the fault of the queen. One writer says that sometimes a colony will kill their own queen if she gets on the top bar or some place where she doesn't belong. Yes, he is going some when he can get the bees so angry that they will kill their own mother. My bees do not do that; neither do they mutilate a queen that has come through the mail so badly that they must supersede her the first season. I will not attempt to discuss all the things that have been said by Jay Smith and others in regard to introducing queens in August, or when there is no honey flow. But I will say that it is not at all according to my investigations, by any means, and that all my requeening is done in October, after the flow is over and the bees have nearly quit rearing brood, and so sure am I that they will accept all the queens that a second examination is not necessary.

Directions as given on the address card for introducing queens at any time of the season are absolutely sure provided the bees are in the right condition, which means normal condition. By this I mean that the bees should be contented. Bees are not in a normal condition when they are fighting mad or excited by the temptation usually put before them by leaving the entrances wide open, as they should be when there is a honey flow. Many times the honey flow will stop suddenly; the bees cannot stop suddenly, and of course the odor of honey is still in the air from the large entrances. We can smell it, and of course the bees can. The flowers where they have been working have gone on a strike; the bees still smell new honey, and bees that have any energy at all will try to get to it. Bees are go-getters, anyway; smelling around other people's business makes the whole apiary angry. Wouldn't this be a hard time to introduce queens? Yes.

Maybe this is the reason Mr. Cole and others fail. It must be. There is no other reason.

This may sound a little radical and possibly everybody will doubt it. But the bees proved it to me, and I have proved it to other beekeepers here.

Liberty, Mo.



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"DIAMOND I" clear, brilliant fluted Honey Jars intensify the natural appeal of mellow, golden honey. They assist in making your product a fast moving item on the dealer's shelves.

Most Beekeepers Supply Houses are equipped to supply you promptly with either ½ lb. or 1 lb. Jars, complete with tight fitting caps, and packed in two dozen Corrugated Reshipping Cases.

If you are unable to secure "Diamond I" Honey Jars from your local distributor, write us direct.

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DANDELIONS IN BRITISH COLUMBIA

By G. G. Pearcey.

In November question and answer columns a correspondent asks as to the value of dandelion honey for winter stores. You may be interested in our experiences with it, as at Kelowna, in the dry belt of this province, where I keep my bees, we have dandelions in such profusion as can be scarcely surpassed elsewhere. But our locality is pre-eminently an apple growing district and the bees do not usually work dandelions freely until fruit blossom is failing. We use a two-story, ten-frame Langstroth hive for spring brood rearing, and sometimes with a rush of early nectar need an extra story. Later we confine the queen to the lower hive body with the queen excluder. When extracting time comes we have a good deal of trouble occasionally through the early honey having granulated while still on the hive. This season, following fruit blossom, we had a complete dearth of nectar for three or four weeks, during which time the early honey was almost completely used up and we had practically no trouble at extracting time with granulated honey, although from one hive that had been exceptionally strong early in the season I took some comb that had granulated so solidly that, even when uncapped, very little honey could be thrown out in the extractor. These were combs built from foundation during the early flow, so that it was not possible that they contained stores granulated during the previous winter.

Under our local conditions, with the early rush of nectar, brood raising is greatly stimulated, but with the failing of fruit blossom the queens let up on egg laying and then begin general preparations for swarming. I intend to try requeening with young laying queens, at the peak of egg laying and before queen cells are started, figuring that there should be less swarming and more brood raised during the ensuing dearth before the main flow starts. Our average rainfall is only about twelve inches, and for the main flow we are dependent chiefly upon alfalfa, vetch and clover grown under irrigation, as clover crops in the orchards. Our yields are not large, but the honey is of excellent flavor and density.

Michigan Beemen Meet

The Michigan beekeepers held their fifty-fourth annual convention at Lansing on December 13 and 14. This is one of the oldest organizations of beemen in America. It is doubtful whether any now living attended the first convention fifty-four years ago. Our readers would like to know whether Michigan is in fact the oldest American society of beekeepers. If there is an older one, tell us about it.

Cold in Scotland

November and December were unusually mild in Illinois, and it is surprising to hear of such cold weather as was reported in other sections. A. H. E. Wood, writing from Scotland, says: "We are having a pretty hard winter here. It started with us in the beginning of November, and, except for three days' break, we have had continuous snow and frost. I have only seen the bees flying one day."

Later—We have had a very cold spell about the first of January.

Radio Talk

R. B. Willson, that wide-awake New York Extension man, will broadcast a radio talk on honey, Wednesday, February 27, at 7:50 p. m., from Station WEAF, New York, 492 meters.

SUCCESS IN 1924

will be yours if you head your colonies with MACK'S vigorous queens. We have hundreds of satisfied customers and you will be another one when once you try them. A postal bearing your name and address will bring our descriptive catalog.

HERMAN McCONNELL, Robinson, Illinois

"No disease ever known." Nuclei a specialty. Write for prices. All orders guaranteed

J. D. SHIELDS
Natchez, Mississippi.

Since taking over the A. I. Root queen yards we are in better shape to fill large orders of A-1 Three-Band Italians, queens and packages. Now booking for spring delivery.

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ROY C. PATTEN, Whittier, Calif.

BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood, polished on both sides. There are no better made.

We carry a complete line of everything in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

BEE SUPPLIES

We carry a full line of supplies that are needed in a modern apiary. The best money can buy. Give us an opportunity to submit our prices to you before placing your order for next season.

Send us your name and address and we will mail you a copy of our new catalog, which will be ready for mailing January 1st.

AUGUST LOTZ COMPANY
BOYD, WISCONSIN

NUCLEI COMBLESS PACKAGES ITALIAN QUEENS

FOR 1924

I have no bees with a pedigree, or queens with fancy names, or bees with extra long tongues; nor do I have a non-swarming race. I do not give an extra pound of bees with my nuclei, as they are well measured to start with.

THIS IS WHAT I HAVE

A strain of good, bright, three-banded Italians that will give you a good crop of honey when the honeyflow comes.

THIS IS WHAT YOU WANT

I ship you what your order calls for, exactly on the date you order, weather permitting.

I pay all claims and save you the trouble of collecting.

Health certificate with each shipment. Prices on application.

I have sold out my business in Jesup, Ga., and have purchased a large business in South Carolina, **the state that has no bee disease, and never has had.**

A. B. MARCHANT, Conway, S. Carolina
Reference: People's National Bank, Conway, S. C.

FROM EUROPE

A letter from Jugoslavia gives us the following information:

The crop of honey in Jugoslavia is middling good. The spring was late; May, usually called the wonderful, brought all the bad and mischievous weather that is usually attributed to its predecessor, April, with drizzling rains and blasts of rough winds. So, until June the bees hardly found enough honey to sustain their existence and many a beekeeper was obliged to feed, until the middle of June.

In July and August, buckwheat bloomed under very favorable weather conditions and yielded an abundant crop of both grain and nectar. As the area of this crop is usually large in the Slovenish territory, the honey crop was from medium to good.

The price of honey here is about 15 cents per pound and the yield of surplus of a colony averages about 24 pounds.

We have no disease of the adult bees in Jugoslavia. The Isle of Wight disease has created a condition which is harmful to the international trade in bees, and the progress of apiarian research, and we question whether the laws against importation from Jugoslavia is opportune.

The June number of the Slovenski-Tchebelar contains a description of the Dadant hive and illustrations of its construction.

Do poultry eat bees? We have ascertained that they often eat drones, but not worker bees. It would be interesting to know why they do not eat workers and how they know them apart. This is a good question for American ingenuity to answer.

Here is a little story of an incident which happened in one of our villages:

On a beautiful day a beggar, seemingly of very poor health and on crutches tottered into the village, appealing in pitiful tones at every house to good-hearted peasants for alms. At every house his entreaties found willing ears and open hands and very soon his pockets were filled with the best products a farmer can afford, and besides this a bank note of the realm found its way into his pocketbook. The fellow then decided to get a little rest and recreation. Where could he get both better than at the village inn? So there he marched. It is hardly necessary to remark that whisky was one of the main things he considered necessary to restore his spent vitality and vigor. After imbibing freely and copiously, he took his load, alcohol and otherwise, to an orchard and, lying down on the soft grass he soon fell asleep. Not far away there was a beehouse whose little inhabitants were busy gathering honey. The weather was sultry and showed signs of an approaching storm. This made the bees cross. When they became aware of the fumes of the whisky exhaled by the sleeping fellow their

blood rose to a height of excitement impregnated with furious rage. The attack began, the fellow awoke to find himself in a cloud of winged Tartars, his legs and arms began to vibrate, but without avail. He jumped from the ground and ran like a deer and vaulted a high fence like a born acrobat—he was a cured man of all bodily ills, even the ones he never suffered from.

This shows that bees cure not only gout and rheumatism but also other bodily ills.

Alexander Toman,
Lubljana, Jugoslavia.

FROM AN ARIZONA MAN

I got my first inspiration in beekeeping when my father bought a colony of bees in a nail keg in 1857. He was a great reader and, as soon as the American Bee Journal started, he and I got the bee fever. But father soon turned the bees over to me; so I have been a beekeeper about 66 years. I invented a square frame hive about 60 years ago, and when the American hive and the Mitchell hive came into use we bought their patents. But mother scolded me because I took wheat out of the bin to pay for the patents, saying that my hive was better than either of them.

Many yards in Arizona to-day are run in my style of hives, and I have produced several carloads of honey in them. But I am changing to the 10-frame Langstroth hive so as to have everything standard, as it is easier to buy supplies.

I had the ambition to be the largest beekeeper, but when I got up to 1700 colonies and found some ahead of me, I stopped counting. I am handling 18 apiaries, doing my own work and my own cooking. I had two hands to help extract for 65 days the past year.

Beekeeping pays better than any other industry in this part of the country. It takes less capital and less labor, but of course a man cannot expect to save money if he only runs three or four hundred colonies. I got my inspiration from W. Z. Hutchinson when he said "Keep more bees."

We have had a drouth for about 18 monhts, but we are now having plenty of rain and the desert looks green. A few spring showers will give us a great swarming season and a nine months honey flow. We had a bad season, but were not hit so hard as California, last year.

B. A. Hadsell.

WEATHER FORECASTS FOR BEEKEEPERS

For some years past the Weather Bureau has been assisting beekeepers by sending them forecasts of mild periods in the late autumn which are likely to be followed by cold and unsettled weather, in order that the bees may get a general flight as late in the season as possible, but be housed before unfavorable conditions set in. Forecasts are also issued in the spring to guide beekeepers in removing bees from winter quarters. These forecasts have been sent to individual beekeepers on request, and there has been a systematic service of this character in New York State, carried out in co-operation with the apiary department of the State College of Agriculture.

At the request of the American Honey Producers' League, the scope of this work is to be enlarged so that beekeepers in any part of the country can have sent to them such forecasts as they may desire. The Weather Bureau will make no charge for its services, but recipients will be expected to pay the telegraph charge.

A New Bulletin

The Canadian Department of Agriculture at Ottawa has recently issued a new bulletin entitled "Bees and How to Keep Them," by C. B. Gooderham, the Dominion Apiarist. It contains 60 large pages and covers the subject quite fully. It is written especially for beginners, and should prove very helpful to the novice. Mr. Gooderham gives the kind of information that the beginner should have to get started right, including the life history of the bees, kinds and sizes of hives, spacing of frames, wiring of frames, use of foundation, handling bees, spring management, production of honey, etc. There is also information concerning sources of nectar, treatment of disease and other subjects. Those interested should write Mr. Gooderham at the Government Farms, Ottawa, Canada, for copies of the bulletin.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1924

1 untested queen	$1.00
1 tested queen	1.50
1-lb. package of bees	2.00
2-lb. package of bees	3.00
3-lb. package of bees	4.50
Nucleus, per frame	1.50
Additional pound of bees with nucleus	1.00

No disease; safe arrival guaranteed; bees inspected.

J. W. SHERMAN, Valdosta, Ga.

FREE! ART PICTURES

of Ideal Chickens in Beautiful Natural Colors, 8 x 11 in., suitable for framing. Given only with Poultry Tribune—every issue. World's Great Poultry Paper. Chuck full of money-making ideas, articles, news by foremost poultry authorities. Pub. monthly, 80 to 120 pages. SPECIAL OFFER:

5 Big Trial Issues 25c
1 Year 50c; 3 Years $1.00
Send stamps or coin today.

Poultry Tribune, Dpt. 5 Mount Morris, Ill.

Burleson's Three-Banded Italian Bees and Queens

One of the oldest, largest and most successful shippers of combless packages in America, ships only on sugar syrup, and guarantees safe arrival and no brood diseases of any kind. Ten per cent books your order.

2-lb. package, with select untested queen, $3.75 each; 25 or more $3.50 each.

3-lb. package, with select untested queen, $5.00 each; 25 or more $4.75 each.

T. W. BURLESON,
Waxahachie, Texas.

Paint Without Oil

Remarkable Discovery That Cuts Down the Cost Of Paint Seventy-Five Per Cent

A Free Trial Package is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powder-paint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a trial package will be mailed to you, also color card and full information showing you how you can save a good many dollars. Write today.

3000 Nuclei for 1924

A superior strain of Italian bees, consisting of nuclei, combless packages and queens. We guarantee every package to be the very best quality or money refunded; also safe arrival and free from disease, and pay all claims. Health certificate with each shipment. Ten per cent down to guarantee acceptance. Three-frame nuclei with select untested queen, 1 to 10, $5.00; 11 to 25, $4.85; 26 to 50, $4.65; 100 or more, $4.40. Two-lb. package, $4.50. Queens, select untested, 1, $1.00; 6, $5.50; 12, $10.00. Select breeders, $5.00 and $10.00. Reference: Brunswick Bank & Trust Co., Jesup, Ga.

Wayne Apiaries Incorporated, Jesup, Ga.

TENNESSEE-BRED QUEENS

Fifty-two Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

	Nov. 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	$2 00	$ 8 50	$15 00	$1 50	$ 7 50	$13 50	$1 25	$ 6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Select tested, for breeding, $7.50.

The very best queen, tested for breeding, $15.

Capacity of yard, 6,000. I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

JOHN M. DAVIS, Spring Hill, Tenn.

Our 1924 Bee Supply Catalog is Now Being Printed

If you do not receive our catalog regularly be sure and write for it at once.

It will save you money and give you the best bee supplies made.

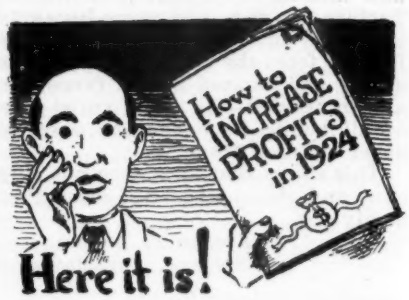
THE FRED W. MUTH CO.
Pearl and Walnut Sts., Cincinnati, Ohio.

1924 **PACKAGE BEES** **1924**
Yancey Hustlers. Three-Band Strain, Only

Our bees are building a reputation as honey-producers in every section of the country. If you are not satisfied with your present strain, order a few packages of the Yancey Hustlers, headed by our select young queens, and we will get your future business. Our motto, "Every Customer a Booster."

Safe arrival and satisfaction guaranteed on every package and queen shipped. We are now booking orders for spring delivery, and will be glad to send you prices and full particulars. No more orders booked than we can fill promptly on dates specified.

Caney Valley Apiaries, Bay City, Texas
YANCEY BROS., OWNERS



After many years' work and study among the bees, and after more than 30 years of serving the beekeepers, we have come to know what counts most in a strain of bees and to know the requirements of the big honey producers of America.

Our latest booklet, "How to Increase Profits in 1924," places our experience at your command. It is a timely booklet, for it discusses a step in the purchasing of bees and queens which is most important to the man who must get the most out of this year's work.

Your request on a card will bring a copy to you free.

W. J. FOREHAND & SONS
Fort Deposit, Ala.

CAUCASIAN BEES AND QUEENS

April 1st, I offer to the public some of my Caucasian bees that I have tested out in a commercial way for many years and can recommend to those who are not satisfied with their present stock.

Three-frame nuclei with queen, $6.00. Tested queens, $2.00; untested, $1.50.

WILDER'S CYPRESS HIVES

Will give you satisfaction in point of service and prices to suit you.

Write for prices.

DIXIE BEEKEEPER

Published monthly. Brim full of news and practical information for beekeepers. Sample free.

J. J. Wilder, Waycross, Ga.

I can interest you in your package bee and queen requirements for 1924. A card will bring my circular and price list.

R. V. STEARNS
Brady, Texas

Crop and Market Report

Compiled by M. G. Dadant

For our February Crop and Market report we asked our reporters to give us the following information: 1, How is honey selling, and are prices being cut? 2. How much honey on hand? Will it all move before the new crop comes in? 3. What are honey plant prospects? 4. How have bees wintered so far?

HONEY SALES AND CUT PRICES

As is usual, immediately following the holidays, there was a considerable slump in honey sales, and at this writing (January 17) the sales are just beginning to pick up again.

Fortunately, the large volume of honey has been moved by this time and there is no inclination on the part of beekeepers, still having honey for sale, to cut prices. In fact, the honey left now is in the hands of parties who demanded a fair price and have held their honey until the price cutters had disposed of what they had on hand. As a consequence, the honey on the market will move at remunerative prices.

HONEY ON HAND

There is a uniformity of answers as to the amount of honey still on hand. Practically all beekeepers give a negligible amount, ranging from 2 per cent to 25 per cent, and even in the case of the dealers the amount on hand is shrinking to small proportions.

There is still report of a few cars in the inter-mountain territory, three or four cars in Idaho, as well as possibly three cars in the hands of the association in Texas.

There is, of course, in addition to this, a number of cars in the hands of dealers throughout the country, but dealers have not bought heavily in advance and their stocks are limited.

As an instance of the tendency of honey buying we have information that one party in the inter-mountain territory was offered 9½c for white extracted, carload lot. He refused this and is holding for a price of 10c per pound.

There is also uniformity of opinion as to the amount of honey that will be left on hand when the new crop comes. It seems from reports coming in to us that there will be very little, if any, honey carried over into the new crop year, and such as there is will be carried over by some parties who are maintaining a stiff price and are holding rather than sacrificing below what they think is right. A little honey will also be held on the part of some dealers, but this is also negligible.

HONEY PLANT PROSPECTS

Up to January 1st, honey plant prospects were only fair in some sections of the country. There seems to be a belt extending from southern Minnesota through Wisconsin and northern Indiana and as far as Pennsylvania, where the fall rains have been slack and plants went into winter with the ground very dry. In some places the clover plants had been completely dried out during the fall and there would in these cases be very little prospect of a revival in spring.

However, in most sections, there has since been heavy snows, which will in a measure help.

Generally throughout the Central West and Mississippi Valley the fall rains have been sufficient to start the clover plants. It does not appear at present as though there would be a bountiful white clover crop, but it does not seem probable that the crop will be as short as in the season just passed.

In the southeast, honey plants seem to be in good condition, with the usual prospects for a crop, if the bees come out in good shape and the plants are not hurt by late frosts.

Texas seems to be expecting more than ordinary possibilities of its honey plants during the spring of 1924. In fact, one report from a reliable authority states that the prospects for honey are better than they have been in a decade. The fall rains have been copious and the fact that the plants had little bloom during 1923 will make the bloom all the more abundant in 1924.

In fact this authority states that about the only thing that could hinder a honey crop for Texas would be an unusually bad freeze late in the spring. We will hope that this is not coming. In the Central West and in the Inter-mountain territory it is too early to come to any conclusion.

California is still reporting a lack of rainfall, but this may yet be corrected in sufficient time to warrant a good honey flow.

CONDITION OF BEES

The unusually warm fall and early winter have kept bees in excellent shape but, on the other hand, have reduced their stores materially. There is universally a prophecy on the part of reporters that the smaller beekeepers will fare badly because of the fact that their bees have used up such large quantities of stores during early fall. This will be especially noticeable with the unpacked bees where heavier stores will be necessary in order to guarantee warmth during the winter.

The commercial beekeeper in most instances will have protected his bees with sufficient stores to last until early spring and will be on the lookout for possibilities of feeding when spring arrives. It is undoubtedly true, however, that the smaller beekeepers who pay no particular attention to their bees will likely suffer heavy losses from shortage of stores.

Cellar wintered bees seem to be in as good shape as usual even though many were put in early when the weather was yet warm. There seems to be little fear but that bees will come through in good condition except for the smaller beekeeper above mentioned.

HONEY PRICE PROSPECTS

It seems very early, indeed, to look forward to the next season as to the possibilities of honey prices.

The fact that the honey market will be absolutely bare by the time the new crop comes will be a great point in favor of maintenance of honey prices during the 1924 season. On the other hand, sugar prices are dropping over what they were last fall, and economists are suggesting that we may look for a further reduction in the price of sugar during the 1924 season.

Undoubtedly honey should not be affected by the range in price of sugar. However we cannot believe that there has been sufficient effort toward marketing made by beekeepers as yet, to establish a firm market for honey. As a consequence, we may look for the usual slump situation in the honey market during the coming season and possibly a drop in prices should there be an unusually heavy production.

It is too bad that beekeepers are not yet in a position to insure the demand for honey by thorough, and well-placed advertising.

Some few localities are carrying on marketing campaigns and a number of individuals are learning methods by which they may profitably dispose of their crop.

The rank and file of beekeepers, however, are content to wait until the new crop is harvested and ready for the market before they even consider the advisability of finding an outlet for such honey. This is bound to cause a slump in the honey market when a heavier crop comes on. In fact, there was much price cutting during the past season with a short crop and a heavy demand.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

BEES AND QUEENS

HONEY IN PAILS—
Atwater, Meridian, Idaho.

BEAR'S MOUNTAIN BRED BEES—
Hinton, West Virginia.

GOLDEN ITALIAN QUEENS, producing bees solid yellow to tip; selected, untested, $1.00. Tested, $2.00. Disease free.
H. G. Karns, Victorio, Va.

BEFORE placing your order for bees and queens for 1924 delivery, write to us for special prices on quantity lots.
The Stapleton Apiaries, Colquitt, Ga.

BEES AND QUEENS—The same high quality and prompt service as formerly, at lower prices. Untested queens, $1.00 each; $11.00 dozen; $80.00 hundred. Select untested, $1.20; $13.00 dozen. Tested, $1.50. Breeders, $5.00. A two-frame nucleus or a two-pound package with queen, $4.25; 12 or more, $4.00 each. A three-frame nucleus or a three-pound package, $5.25; 12 or more $5.00 each. Send us your order with 10 per cent to book, balance just before shipment. Safe arrival and satisfaction guaranteed.
Jensen's Apiaries, Crawford, Miss.

PACKAGE BEES—Circular free.
Van's Honey Farms, Hebron, Ind.

YES, we are still in the game, but in the "Classy Fied" ads, as they cost less and we can sell you bees cheaper if you find us here. Look up past ads.
J. G. Puett & Sons, Moultrie, Ga.

BOOKING orders for 3-band Italian bees and queens. Two-pound package with select, untested queen, $4.25; select untested queen, $1.00; select tested, $1.50. Ten or more, 10% discount. Satisfaction guaranteed.
J. Allen, Catherine, Ala.

I CAN interest you in your package bee and queen requirements for 1924. A card will bring my circular and price list.
R. V. Stearns, Brady, Texas.

PACKAGE BEES, NUCLEI and QUEENS—Let us quote you.
J. J. Scott, Crowville, La.

"BEAR'S BEST BEES"—One-frame nucleus, with one pound of bees and tested queen, $5.00; two-frame nucleus, $6.00. Send for circular.
Hiram H. Bear, Hinton, W. Va.

FINEST ITALIAN QUEENS—$1.00 each. Booking orders.
Wm. R. Stephens, Wingate, Ind.

WRITE for circular and price list of package bees and queens for 1924 delivery.
M. C. Berry & Co., Montgomery, Ala.

TRY PETERMAN'S QUEENS—They are 100 per cent quality, select, thrifty layers, well laid up before caging, bred from Jay Smith choice breeders by a thoroughly experienced breeder who is absolutely honest and reliable. Repeat orders prove this. Circular free. Prices: 1, $1.25; 6, $7.00; 12, $13.00; 25 at $1.00 each; 100, 90c each.
H. Peterman, Lathrop, Calif.

THREE-BANDED ITALIAN QUEENS—Select, untested, $1.00 each, $12.00 per doz. Two-pound package with queen $5.00. Safe arrival and satisfaction guaranteed.
W. T. Perdue & Sons,
Fort Deposit, Ala., R. No. 1.

BEES BY THE POUND; also Queens—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere. Ault Bee Co. (Successors to Nueces County Apiaries); San Antonio, Tex. E. B. Ault, Prop.

SEE our display advertisement on page 61.
Loveitt Honey Co.

QUEENS for the balance of the season of 1923. Write and get our prices.
O. P. Hendrix & Son, West Point, Miss.

MERRILL'S QUEENS—$1.00 each.
R. E. Merrill, Muncy, Pa.

HARDY ITALIAN QUEENS, $1 each.
W. G Lauver, Middletown, Pa.

SEE my display ad., page 87.
Jes Dalton, Bordelonville, La.

GOLDEN ITALIAN QUEENS—Producing bees solid yellow to tip from record honey gathering breeders. Package bees and nuclei. Circular 1924 ready.
Dr. White Bee Company, Sandia, Tex.

BEES—Three-pound packages, three-frame nuclei and three-frame nuclei with two and one-half pounds extra bees. April and May delivery. None better. Address Running Apiaries, Sumterville, Ala.

PINARD'S quality queens and package bees. Now booking orders for 1924. Circular free. Yours for better bees.
A. J. Pinard, Morgan Hill, Calif.

GOLDEN and three-band queens reared in separate yards; booking orders for 1924. Untested, one, $1.25; doz., $11.50. Safe arrival guaranteed in U. S. and Canada.
Tillery Bros., R. 5, Greenville, Ala.

I AM booking orders for spring delivery. 3-frame nuclei and queens at reduced price. Caucasian or Italian race. No disease.
Peter Schaffhauser,
Havelock, North Carolina.

PACKAGE BEES AND QUEENS—Delivered. Bright Italian. Two-pound packages with selected untested queen, 1 to 5, $4.75; 5 to 25, $4.60; 25 to 50, $4.40; 50 or more, $4.25. Selected untested queens, 1, $1; 12, $10. Safe arrival and satisfaction guaranteed; no disease; ship nothing but the best; 20 per cent cash books order. Begin shipping April the 15th.
W. C. Smith & Co., Calhoun, Ala.

100 HONEY GIRL breeding queens free—Honey Girl strain world famed for most prolific queens, and record honey producers. Our $1000.00 St. Romain's Honey Girl will head our breeding stock. We guarantee highest quality at lowest prices. Golden and Golden 3-band. A card will bring our catalogue and prices on queens and packages and full particulars regarding our offer of breeding queens. We wish to place a high quality breeding queen with every beekeeper who is interested in our Honey Girl strain.
Cottonport Honey Girl Apiaries,
Cottonport, La.
Address to Hamburg, La., until April 1.

PACKAGE BEES, nuclei and queens. Pure bright three-band Italian, April and May delivery. Absolutely no disease. Get my prices and circular before ordering. Guarantee safe arrival.
J. L. Morgan, Apalachicola, Fla.

THREE-BAND Italian queens for 1924. Tested, in May and June, $2 each. After June, $1.50 each. Untested, in June, 1, $1.25; 6, $6.50; 12, $12. Untested, after June, 1, $1; 6, $5; 12, $9. Write for prices on lots of 100 or more. Capacity 1,000 queens per month, and each queen guaranteed in every way; 10 per cent books orders for future delivery.
J. F. Diemer, Liberty, Mo.

PACKAGE BEES AND THREE-BAND ITALIAN QUEENS—That please and give results. Selective breeding does tell. We have been rearing them hr for th past nineteen years. No brood diseases in this section. Write for prices.
Allentown Apiaries, Apiarise, Ala.

PACKAGE BEES, Nuclei and Queens for 1924. Send for circular.
Allen Latham, Norwichtown, Conn.

FOR SALE—100 stands of bees, with full equipment; also 15 acres land. Price reasonable.
G. V. Sumner,
McMurray, Washington.

PACKAGE BEES & QUEENS—Italians or Carniolans. I can save you express charges. See larger advertisement for prices.
J. E. Wing, San Jose, Calif.

EARLY QUEENS—My 1923 tested queens now ready at $1.00 each. Untested queens after April 1, 1924, $1.00 each; $90 per hundred. Two-pound packages priced on request. Pure three-band Italians only. Grown by the very best methods.
D. W. Howell, Shellman, Ga.

GOLDEN ITALIAN QUEENS for 1924. The big, bright, hustling kind. Satisfied customers all over the U. S. Untested $1.00 each, 6 for $5.00, 12 for $10, 100 for $75.00; tested, $1.75. A few two-frame nucleus at $4.50, with queen.
E. F. Day, Honoraville, Ala.

TRY our Golden Queens. They are gaining popularity each year. Satisfaction and safe arrival guaranteed. Price $1.25 each, $11.00 per dozen.
Honoraville Bee Co., Honoraville, Ala.

WANTED—Extractor, pump, melter, tanks and bees in large lots.
L. M. Gulden, Englevale, N. D.

HONEY AND BEESWAX

HONEY IN PAILS—
Atwater, Meridian, Idaho.

FINEST SWEET CLOVER HONEY—5 and 10-lb. pails; ton 12c, carload 11c.
Clyde Fisher, 1502 Cass, St., Omaha, Neb.

FOR SALE—Several thousand pounds No. 1 white raspberry-milkweed honey, put up in new 60-lb. tin cans.
L. C. Gordon, Bellaire, Mich.

40 CASES fancy No. 1 white clover comb honey, $5.50 per case. 24 sections per case.
Winkler Honey Co., Joliet, Ill.

FOR SALE—Choice clover extracted honey, packed in new 60-lb. cans and cases. Write for price, stating quantity desired. Also have a few cans of amber honey.
J. D. Beals, Oto, Iowa.

BUCKWHEAT in 5-gal. cans, two per case, at 10c pound. Try a 5-pound pail; it's delicious. Produced in the Hilderberg Mts. $1.25 a pail, postpaid.
H. Greulick, Scotia, N. Y.

FOR SALE—Choice extracted honey.
C. F. Sager, Chillicothe, Ill.

CHOICE extra fancy white clover honey in new 60-lb. cans; 120 lbs. net, $14.00. Sample 20c.
Edward A. Winkler, Joliet, Ill., R. No. 1.

FOR SALE—24 cases No. 1 dark comb and 24 cases No. 2 white comb honey, 24 sections to case, six cases to carrier; $4.00 per case. Dark extracted, about half clover, 10c per pound, two 60-lb. cans to case.
H. G. Quirin Bellevue, Ohio.

FOR SALE—Comb and extracted white clover honey. Extracted in 60-lb. cans, 5 and 10-lb. pails. Prices given on request. Sample 15c.
F. W. Summerfield,
Waterville, Ohio.

FOR SALE — White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

FOR SALE—White honey in 60-lb. cans; also West Indian in 50-gal. barrels. Samples and prices on request.
A. I. Root Co.,
23 Leonard St., New York City, N. Y.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire.
Dadant & Sons, Hamilton, Ill.

1923 CROP clover honey in 60-lb. cans, also 5 and 10-lb. pails. Prices upon request. Sample 10c.
Sioux Honey Association, Box M. 26,
Sioux City, Iowa.

WHITE EXTRACTED HONEY—White clover, basswood and sweet clover. Very fine color and body; it will please your customers; 60-lb. cans and 5-lb. pails. Sample 15c.
W. A. Jenkins, 20 Bluff St., Hamburg, Iowa.

HONEY FOR SALE—In 60-lb. tins; white clover, 13c, for immediate shipment from New York
Hoffman & Hauck, Woodhaven, N. Y .

FOR SALE—Choice white clover and milkweed honey in 60-lb. cans. Sample and prices on request. Ralph Lenosky,
East Jordan, Michigan, R. No. 5.

SEE our display advertisement on page 61.
Loveitt Honey Co.

FOR SALE—Extra choice white clover honey, new 60-lb. cans. Case or carload. Also choice light amber. Sample 15c.
David Running, Filion, Mich.

HONEY FOR SALE—In 60-lb. cans; clover-basswood. State quantity wanted. Sample 15c.
Edw. Hassinger, Jr., Greenville, Wis.

FANCY clover-basswood honey in 10-lb. and 60-lb. tins; 10,000 lbs. Sample 15c.
Oakdale Apiaries, Rock Creek, Minn.

SUPPLIES

BEAR'S MOUNTAIN BRED BEES—
Hinton, West Virginia.

SOUTHWESTERN distributors for Robinson's comb foundation. Send for price list. Holloway Bros., Marietta, Okla.

FOR SALE—136 holders and 155 fence separators for 4¼x4¼x1½ plain sections, used. First $8.00 takes lot.
Chris Holm, Genoa, Ill.

AUTHORIZED DISTRIBUTOR—Lewis Beeware and Dadant Foundation for eastern Indiana and western Ohio. Quick shipments and low freight. Write for catalog.
The Brock Store, Decatur, Ind.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates.
E. S. Robinson, Mayville, N. Y.,
Chau. County.

SPECIAL PRICES—We are offering at specially low prices some very high grade material in shipping cases, frames, hives and miscellaneous which represent items we no longer carry regularly in stock or which have to be closed out to make room for new stock specially equipped to take Dadant's Wired Foundation. If interested, write for list; we can save you money.
Dadant & Sons, Hamilton, Ill.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

CONNECTICUT and Rhode Island headquarters for Root's Beekeepers' supplies.
A. W. Yates, 3 Chapman St., Hartford, Conn.

ATTRACTIVE LOW PRICES—Write us for list of odds and ends, shipping cases, hives, etc., first grade, priced to save you money.
Dadant & Sons, Hamilton, Ill.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

I CAN save you money on bee supplies. Write for prices.
E. G. Lewis, Beeville, Texas.

IDAHO White Pine Bee Supplies. Select material. Excellent workmanship. Prices low. Satisfaction guaranteed. Write for sample and prices.
John E. Thomson, Coeur d'Alene, Idaho.

FOR SALE OR EXCHANGE FOR PACKAGE BEES—Neat home-made 10-frame extracting supers, nailed and painted white. Lots 50 to 100, $40 per hundred, with unspaced frames, $77 per hundred.
Henry Eggers, Birchwood, Wis.

FOR SALE OR TRADE, at a bargain—Second-hand eight-frame hives.
D. E. Lhommedieu, Colo, Iowa.

FOR SALE—Used hives, clean, telescope covers. P. S. Crichton,
47 Alma Ave., Waverley, Mass.

FOR SALE

HONEY IN PAILS—
Atwater, Meridian, Idaho.

SEE our display advertisement on page 61.
Loveitt Honey Co.

FOR SALE—Good second-hand 60-lb cans, 2 cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave.,
Cincinnati, Ohio.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Ill.

FOR SALE—Soiled cane sugar for feeding bees. Get your supply now for spring feeding. Winkler Honey Co.,
Joliet, Illinois, R. No. 1.

FOR SALE—Bees in southern California. One small equipment of ten colonies, one of ninety-three. Rather light in stores, but excellent equipment. Another of 500 colonies in fine shape. Write
G. Lohrli, Riverside, Calif.

FOR SALE—Our choice white clover Boston Valley honey, put up in new pint and quart fruit jars. State quantity wanted.
Howard Minnick, Boston, N. Y.

FOR SALE—A very fine quality, light amber extracted honey; $13.00 per case of two 60-lb. cans.
J. G. Burtis, Marietta, N. Y.

FOR SALE—500 colonies Italian bees, all requeened last July and August. Equipment like new. One hundred Root double-walled and balance ten-frame standard. All combs built from full sheets wired. Selling to reduce; account of other business am unable to handle them. If interested in a good outfit, write for full particulars.
B. F. Shumway, Reinbeck, Iowa.

THOROUGHLY EQUIPPED APIARY, bearing fruit trees and four-room house. For further particulars, address
A. Beyer, Krotz Springs, La.

FOR SALE—15 colonies Italian bees. New 10-frame hives, metal cover. No disease. Reasonable. Also used 60-lb. cans.
Maplewood Apiaries, Dubuque, Iowa.

FOR SALE—My apiaries at Willcox, Ariz., 450 colonies, complete outfit for extracted honey. Excellent crop prospects.
N. J. Stahmann, Clint, Texas.

FOR SALE—Fox terriers, hunters, companions, puppies, dogs.
Lorenzo Clark, Winona, Minn.

FOR SALE—Two-frame nucleus Italian bees and queen, $4.00. Booking orders now for early May delivery. Guarantee satisfaction. J. G. Prosser,
201 Fifth Ave., N., Ft. Dodge, Iowa.

FOR SALE—60 to 100 colonies of mostly Italian bees; everything up to date; no disease. Write for particulars.
Duane Shaw, Palestine, Ill.

FOR SALE—Thrilling western adventure fiction books, 31 cents each, postpaid third zone. List free.
I. W. Westlund, Hinckley, Minn.

FOR SALE—Typewriter, Smith Premier, in first-class condition, $15.00.
Robert F. Evershed,
Irondequoit, N. Y., Beachwood Sta.,
Rochester.

52 COLONIES of bees on full sheets foundation, 10-frame hives, and complete outfit, in first-class condition. Further particulars on application.
W. H. Elliott, Chapanoke, N. C.

FOR SALE—White pine, light frame 1½-story bee hives. All new hives. Price $2.25 each f. o. b. Berlin.
Clarence Erdman, Berlin, Wis., R. 1, Bx 72

FOR SALE—100 colonies of bees in new 10-frame hives with metal covers, together with 150 deep 10-frame extracting supers with combs.
Chester E. Keister, Orangeville, Ill.

FOR SALE—Twenty 4x5 section supers with fittings, knocked down. Root goods. Latest style. In original crates just as received from factory. $6.90 per crate of five. Also 10 standard hives, metal covers, Root goods, knocked down. In original crates. $16.00 per crate of five.
Merton Church, Highland Park, Ill.

FOR SALE—Pure beeswax rendered from cappings 1923 crop.
Winkler Honey Co., Joliet, Ill.

MISCELLANEOUS

HONEY IN PAILS—
Atwater, Meridian, Idaho.

BEAR'S MOUNTAIN BRED BEES—
Hinton, West Virginia.

GREBE AND WESTERN ELECTRIC loud speaker. One of the best radio receiving outfits. Like new
Van Wyngarden Bros., Hebron, Ind.

WILL TRADE package bees for white honey. Mail sample.
Van's Honey Farms, Hebron, Ind.

WRITE for application blank if your education, business experience and beekeeping knowledge would make you available for positions in our sales and warehousing organization. Address Box 377, care American Bee Journal.

GIANT CANNA LILY BULBS—Height 6 ft., orange to rose. 6, 75c; 12, $1.25, postpaid. Write for information.
Milo Keller, Correctionville, Iowa.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

PLANS FOR POULTRY HOUSES — All styles; 150 illustrations; secret of getting winter eggs and copy of "The Full Egg Basket." Send 25 cents.
Inland Poultry Journal, Dept. 56.
Indianapolis, Ind.

EXPERIENCE AND FAIR WAGES to active, industrious young man for help in well-equipped apiaries. Seven hundred colonies. April to December. State age, height, weight, occupation, wages. Morley Pettit, Georgetown, Ontario, Canada.

THE "Archiv fur Bienenkunde" is a valuable scientific publication. "It merits the appreciation of all beekeepers acquainted with the German language," says the Bee World (January, 1923). "The Archiv fur Bienenkunde, now in its fifth volume, is of as high grade as any bee journal which comes from abroad, dealing especially with the scientific aspects of beekeeping," says Gleanings in Bee Culture (February, 1923). Annual subscription, $1. Specimen copy free. Publisher, Theodor Fisher, Freiburg im Breisgau, Kirchstrasse 31, Germany.

HUBAM Clover Seed. Wisconsin grown. Write for prices. A. C. Baumgarten,
R. 2, Box 27, Thiensville, Wis.

LONESOME?—Then get "a date with your honey" and enjoy the evening. Meet the rest of the family of Hon-E-Nut Chocolates. You'll like them all. $1.00 per pound postpaid. Chocolate beehives full of honey and nuts, two for 25c or $1.10 per dozen, postpaid.
Fairmount Apiaries, Schuylkill Haven, Pa.

FOR TRADE—160 acres in Aitkin County, by McGregor, Minnesota. Will exchange for bees.
George Wicks, Elmore, Minn.

YORK'S BEES AND HONEY, monthly, edited by George W. York, Spokane, Wash. Sample free, on request.

WANTED

WANTED—Situation as helper in well-equipped apiaries, for coming season, by young man of good habits and character. Would prefer offers from Montana, Idaho, or Wyoming. Have had one year's experience. Edwin Timmons, Fromberg, Mont.

WANTED—Dependable man to work in 10 apiaries of 1000 swarms; competent to take charge if necessary. Experience in producing comb honey desirable but not essential. Give full particulars concerning yourself in first letter, including wages expected and time you will be at liberty.
J. E. Crane & Son, Middlebury, Vt.

A YOUNG man of energy and character who wishes to learn practical beekeeping where carloads of honey are produced. Every chance to learn and small wages given. Write, giving age, height, weight, habits, former employment, experience, photo, all in first letter. Over 1000 colonies, 14 apiaries. E. F. Atwater, Meridian, Idaho (former Special Field Agent in Beekeeping, U. S. Dept. Agr.).

WANTED—Four-frame reversible extractor.
Verdigre Apiary, Verdigre, Nebr.

WANTED TO RENT—Season 1924, on shares with option of buying, carload bees in condition to pass health certificate both points.
C. I. Graham, Yuba City, Calif.

WANTED—Single, conscientious, energetic assistant, experienced in extracted honey production, desiring long term employment, to help in 600 to 700 colony business, and general farming on a small scale when not busy with bees. Must be mechanically inclined. Give present occupation, age, height, weight, and wages expected, in first letter, as well as references regarding character, experience with bees, farm work, etc., or expect no reply. Steady job for right party. Objection to cigarettes and tobacco chewing. Our equipment is strictly modern, and we practice only the most approved methods, while our large buildings afford the very best of working conditions. Further particulars on request.
The Hofmann Apiaries, Janesville, Minn.

WANTED—A position with a commercial beekeeper, by a married man 29 years of age. Have had eight years' experience with bees, also took a course in beekeeping at the University of Tennessee. Have been manager of the University of Tennessee Apiary (consisting of 80 colonies) for the past three years, during which time I taught beekeeping to the vocational students. If desired, good references will be furnished. For full particulars, write H. B. Steele, Rogersville, Tenn.

WANTED—Experienced beekeeper to operate 300 or 400 colonies on shares. Reference required. Good proposition to right party. J. D. Beals, Oto, Iowa.

MAN, age 38, with four years' experience in beekeeping and making hives, wishes position in bee apiary this coming season.
R. H., care American Bee Journal.

WANTED—Honest, industrious helper in queen yard and out-apiaries.
M. C. Berry & Co., Montgomery, Ala.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Man for extracted honey. State age, experience and wages wanted.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Comb honey.
Jamison, 690 Adams, Memphis, Tenn.

WANTED—Situation for coming season by young bachelor of good habits and character who has the ability to handle bees, having had experience with beekeeping and queen rearing. Would appreciate offers from the west or south. Would prefer Florida as a matter of economy; offers solicited. Joe Gates, Lithia, Fla.

WANTED—Car or less lots of clover honey; mail sample and quote lowest cash price.
A. W. Smith, Birmingham, Mich.

BEAR'S MOUNTAIN BRED BEES—
Hinton, West Virginia.

Honey in Odd Place

Iselin, N. J.—Workmen engaged in putting new gutters and leaders on the roof of an old residence here owned by Mrs. Mary Reilly, November 26, came across an immense store of honey in a comb under the eaves of the house. The comb measured 12 feet long, 5 feet high and 2 feet wide, and was estimated to weigh 500 pounds.

It was only after a battle with thousands of bees that held the "fort" that the workmen could remove their find.

FROM THE PRIVATE LETTERS OF CHARLES DADANT

Charles Dadant to Edouard Bertrand,

October 8, 1895.

Dear Mr. Bertrand:

We have just received a letter from the daughter of our old friend, L. L. Langstroth, the widow Mrs. Anna Cowan, informing us of the sudden death of her father, Sunday, the 6th, while he was preaching a sermon in the pulpit of a church, in Dayton, Ohio. The funeral will take place to-morrow, the 9th. Unfortunately, I am now too old to make such a trip without fatigue and without risk of catching cold, as it is about 400 miles away. My son, Camille, is suffering just now of rheumatic pains and could not leave either. So we wired to Mrs. Cowan our regret of being unable to attend the funeral of our old friend.

Since he had overcome his head trouble, Langstroth had also recovered his energy. So he had attended, with Mrs. Cowan, the North American Beekeepers' convention, in September last, at Toronto, Ontario, a city situated over 400 miles from Dayton. He spoke there at great length upon the first importations of Italian bees into the United States. It is unnecessary to tell you that the presence at this convention of the father of American beekeeping was welcomed with the warmest enthusiasm.

It is probable that the fatigue of this long trip, in connection with his incessant studies upon the progress of beekeeping, had some influence upon his sudden demise.

In order to give you an idea of the activity of his mind, upon the question of beekeeping, I will state that, after his return from Dayton, he wrote an article for the American Bee Journal in which he took a hand in the discussion upon the size of brood chambers, and told that hives with thirteen frames yielded a greater crop than those with ten frames, thus recognizing that I made an improvement in his hives by enlarging their size. He also sent me a piece of poetry of twenty-four verses, upon the death of my dear wife; lastly, he had written us to ask us to try feeding bees with malted milk mixed with honey, to take the place of pap or jelly, during a dearth of honey, in the hope that this food would induce the bees to breed. This idea came to him when reading what Thomas W. Cowan has to say concerning chyle food for larvæ.

He also stated that he had communicated this idea to several beekeepers in order to determine in a positive manner whether there was anything worth while in his suggestion.

When we think of such great activity in a man of 85, it is easy to comprehend that his nervous system should be unable to stand it. In the attacks of what he called his "head trouble," only a portion of the brain was affected; this made him incapable of thinking, especially concerning bees, for months, and sometimes for years. But in this instance the stroke was more violent. Such a death is a happy one, for the one who goes, but it is grievous for those who survive a relative as lovable and as loved as he was by his own people.

North Dakota Notes

There are two large fairs in this state—the State Fair and the Interstate Fair, which are held annually in Fargo and Grand Forks. At the Interstate Fair held in Fargo last summer $269 was listed for premiums in the department for honey and bees. I served as superintendent of this exhibit.

At the State Fair, held at Grand Forks, a total of $165 was listed. Our fairs come early in the season and our beekeepers are slow in exhibiting. The exhibit at Fargo last summer was by far the largest honey exhibit ever displayed.

According to the last report issued by the commissioner of agriculture and labor at Bismarck, a total of 13,054 hives of bees were present in North Dakota in 1923. I have not been able to verify these figures and so far have not made any statement regarding it. This represents an enormous increase over any previous figures available. According to the government census of 1921, there were only 708 hives of bees in the state.

While the honey production for this year is doubtless much less than that of 1922, I see no reason for any discouragement. In Cass County, in which Fargo is located, the average production is certainly no less than 200 pounds per colony for extracted honey. Our own apiary, which is run only for comb honey, produced an average of 93 pounds. I find that the location of the college apiary is too shady, so that the bees do not become active until well on into the day. This will probably be changed another year.

R. L. Webster.

Texas Gets Good Prices

The Bulletin of the Texas Honey Producers' Association states that the fall and winter prices of honey at whol sale in 60-pound cans range from 16 to 20 cents per pound. The same honey sells at retail in 10-pound pails at 22½ cents per pound. The Texas fellows can surely set some of the rest of us a good example when it comes to marketing their crops.

From the Bulletin d'Apiculture of Switzerland

A few months ago, the janitor of a small city office, in the good town of Lausanne, was instructed by the manager to clean his office and wax the floor, etc. The brother of this manager had recently forwarded to him a pail of granulated honey. It happened that this pail was similar in appearance to the pails containing floor wax and had been left at the office.

The janitor, perhaps under the influence of a little booze, made a mistake as to the pail and spread honey upon the entire floor; but when he began to rub—not a bit would the wax rub in! The manager came soon after and could not help laughing, for the janitor had about as much on him as the floor did.

"What are you doing there?"

"I, I don't know what's the matter, but they have put so much turpentine in that floor wax that it's making me dizzy."

They had to scrape and wash the floor and call a carpenter, all because of so much turpentine in that floor wax.

The beekeepers of French Switzerland, at a meeting, agreed to set the price of honey at 24 to 26 cents wholesale, and 40 to 44 cents retail. But when the time came for selling, some of the beekeepers took fright and some of their honey was sold as low as 22 cents. The publishers of the Bulletin protest against this mistake, especially when all prices are on the increase.

So it is not only in this country that beekeepers are unreasonable and get frightened. Yet, as some of our friends very rationally suggest: Honey is not a perishable article like fresh strawberries or green lettuce. Read that letter of 1884, from Charles Dadant, page 46, January number, in which he states that they had preserved some twenty barrels of it from the year before and expected to get at least 25 per cent better prices. They got it, too.

A BIG CROP

What is the largest crop of comb honey, in one-pound sections, from one hive, if they do not swarm?

We had a fine crop of white honey this year. I have eight or ten hives and I never saw the bees work like this year. I have had bees for forty years. I took 1330 one-pound sections from five hives. They did not swarm, but were very strong. I had five supers in all hives during the summer months and had extra thin super foundation in all sections. Here is the five hives' surplus:

From 1 hive, 12 supers, 336 boxes
From 1 hive, 9 supers, 252 boxes
From 1 hive, 8 supers, 224 boxes
From 1 hive, 10 supers, 280 boxes
From 1 hive, 8½ supers, 238 boxes

Total, 1330 boxes, all fine white honey; no dark honey at all this year.

Ben Kupper, Racine, Wis.

(This is a fine result; but we must warn our readers against becoming too enthusiastic over this. The old beekeepers know, as we do, that a normal crop is nearer one-tenth of that amount, or perhaps 26 sections, instead of 266 per colony. The only crop we ever heard of, greater than this, was that of Dr. C. C. Miller, in 1913, given in the American Bee Journal in the December number of that year, page 406. His six best hives yielded an average of 389 sections. A picture of his apiary, at that time, is shown on page 329 of the "Honeybee," paragraph 727.—Editor.)

Discovery of Honey for Radiator

In the December issue of the Journal I notice the statement at the top of the first column on page 601 that no one knows to whom the credit of the discovery in regard to the use of honey and water as an anti-freeze mixture should go. Mr. James H. Sprout, of Lockport, N. Y., was the first one to use honey and water in an automobile radiator as an anti-freeze mixture, having discovered one bitterly cold winter morning that some water standing there with which he had washed some cappings was still liquid. He began using it at once in his radiator. This was eight years ago, and Mr. Sprout has been using this solution ever since and always with success.

R. B. Willson.

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Bring repeat orders because they insure honey crops and satisfaction to the buyer.
Booking orders now for Queens and Packages for 1924 delivery.
Write for descriptive price list.

M. C. BERRY & CO., Montgomery, Alabama BOX 697

For years we have been shipping thousands of pounds of bees all over the U. S. and Canada

Order Direct from this Ad.

We are prepared to take care of your rush orders

2-pound package bees, $3.75 each, 25 or more, $3.60 each.
2-frame nuclei same price as 2-pound packages.
3-pound package bees, $5.25 each; 25 or more $5.00 each.
3-frame nuclei same price as 3-pound packages.

Untested queens, $1.00 each, 25 or more 85c each, $70.00 per hundred.
This is a special SALE on untested queens of high quality.
Select untested, $1.70, 25 or more $1.50 each. Tested $2.25 each, 25 or more $2.00 each.
Select tested $2.65 each, 25 or more $2.25 each. Breeders $5.00 to $15.00.

ITALIAN CARNIOLANS GOLDENS

AULT BEE COMPANY, San Antonio, Texas
SUCCESSORS TO NUECES COUNTY APIARIES

THE LOYAL WOMEN ARE SELLERS AND HUSTLERS

By Luella B. Lyons.

The Loyal Women's Class of one of the local churches has just added $150 to its treasury that it did not expect. How? Well, the honey salesman of the town went to the president of that class and made an interesting proposition. She then called a meeting of the class at her home and told them the same story the honey salesman had told her.

He offered the class a liberal commission for every ounce of honey sold for his proposition. The members of the class were to lay out the town and countryside into districts and assign one or two members of the class to each district. Every home was to be visited in search of some recipe that contained honey. The announcements were made through the daily papers so that the cooks might be prepared. These recipes were to be collected and all printed in one huge cook book and then sold for 50 cents. The sale of the books would more than cover the cost of the printing and they might have the profit over and above the printing. The names of the contributors might be published below their own contributions or not, just as the contributor wished. The offer met with the approval of the entire class and they spent the remainder of that evening laying and mapping out their respective districts. The canvass was completed in six weeks and ready for the printer.

Those who desired to contribute seemed to always try out their recipes before reporting them in to the committee, and the sale on honey began almost immediately following the announcement. The grocer had been the only one handling it, but, for convenience sake, a supply was handled in nearly every establishment in the town. The cooking class in the local high school co-operated and tried honey recipes and dishes to their hearts' content and then contributed the recipes. The Loyal Women gave the cooking class of the high school a surprise when the book came out; it contained a full-page picture of the class as an endorsement for their recipes. The picture of the Loyal Women's Class was also included, and several other clubs and organizations that had co-operated and contributed toward the book.

Advance orders for the book took the first edition, and the second edition went still more rapidly. School children were given a commission for finding buyers, too. The various members of the class went to other towns and sold the books to stores and housewives. The holiday season came ringing along and the books made excellent and practical gifts, which the Loyal Women wrapped in holiday dresses for the holiday buyers.

The Loyal Women have added $150 to their treasury and there is about $75 yet to be collected. Are they sorry? Indeed no. The work has been pleasant and fascinating and the beeman—well, he just smiles and smiles, and says, "Whenever I need help, I shall now know to call upon the Loyal Women and they will help in the selling game."

North Dakota Convention

North Dakota beekeepers held a very successful meeting at Fargo on November 22 and 23, last. Dr. Phillips of Washington, L. T. Floyd of Winnipeg, Canada, and Geo. H. Rea, of Medina, Ohio, were the speakers from outside the state.

The association passed resolutions opposing the shipment of bees on drawn combs into North Dakota, whether in case of full colonies or nuclei, and hope to secure a regulation in line with the resolution which will prevent such shipment in future.

Illustrated Address on Bee Life

Newark, N. J.—Elmer C. Carr, of Bennington, N. J., State Bee Inspector, gave an illustrated address on bee life, Tuesday evening, November 27, at Morgan Hall, this city. Members of the Essex County Beekeepers' Association attended in a body.

CHAS. DADANT TO ED. BERTRAND

February 27, 1889.

We are having an exceptionally mild winter; the thermometer having only twice registered zero F. Our colonies have not lost any bees. Yesterday I gave them some flour in boxes outside. They came to it in swarms and carried away between 5 and 6 pounds. Today they began to come to it while the thermometer was as low as 40 degrees F., and at 44 degrees they were on it by the thousands. White clover did not suffer and the outlook is good. It may prove to be a compensation for the past two seasons.

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FOR 1924 OUR OLD RELIABLE THREE-BANDED ITALIAN QUEENS will be shipped from one of the largest and best equipped queen-rearing yards in the SOUTH.

We have bought the queen-rearing department of one of the largest beekeepers of the state and have added it to ours, which will enable us to put out double the amount of queens as heretofore.

We are now booking orders for spring delivery, one-fourth cash. Safe arrival guaranteed in U. S. and Canada. Circular free.

Untested, $1.25; 6, $6.50; 12, $12. Tested, $2.50; 6, $14. Select Untested, $1.50; 6, $8; 12, $15. Select tested, $3 each
If you once try our queens, you will always use them.

JOHN G. MILLER, 723 C STREET, CORPUS CHRISTI, TEXAS

THE PROBLEM SOLVED

Ever since the first combless packages of bees were shipped, the problem has been to get a shipping package that would put them through in satisfactory condition, and be easy to put in hives. During the past year, co-operating with Mr. J. M. Barr, of West Allis, Wis., we have evolved a package that is far more satisfactory than others in use at present. Light weight, but very strong construction saves express charges and means no smashed or leaky packages. It puts practically every package through in first-class shape in extremes of heat and cold. One 3-lb. shipping package filled with 4½ lbs of bees as a test, left here on June 9th, 1922. with temperature of 94 degrees, and arrived in perfect condition, with temperature in Wisconsin of 60 degrees. This package saves time and trouble for the buyer to handle; no tearing to pieces to release bees and queen, and fits in any standard single story hive, with room for combs for bees to cluster on. Empties automatically and requires less than five minutes to put package and queen in hive. Sugar syrup used for feed—no danger of disease. You may get as good bees and queens as the Hummer strain, but you will not get better, regardless of name or price. Fair, courteous treatment to all and prompt shipment after April 15th on a trunk line railway, insuring quick delivery. Send for circular giving prices and details of our bees and queens.

GEO. A. HUMMER & SONS, Prairie Point, Miss.

HONEY WANTED

We are ready at any time of the year to take in small or large lots of extracted honey.

Send us a sample and advise quantity you have and the price wanted.

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QUEENS
Three-band Italians

PACKAGE BEES

QUEENS
Silver Gray Carniolans

My northern yards are located near Redding, Calif., the most northern point from which EARLY PACKAGE BEES and QUEENS can be reared in California.
531 miles from Portland, Ore., 716 miles from Seattle, Wash., 872 miles from Vancouver, B. C., 909 miles from Spokane, Wash. I am close to you with not a single hot valley to pass through. Think of the saving in time and express charges, besides a still greater saving in having the bees reach you in perfect condition. I use pure cane sugar syrup for feed in transit and guarantee no disease, also safe arrival.
My Northern customers have shown their appreciation of my Northern service, to such an extent the past season, that I am now adding 2,000 additional large standard three-frame queen-mating hives, besides over 1,000 full colonies, exclusively for Package Bees.
Eastern and Northern shipments via Ogden, Utah, will be shipped from San Jose, Calif., as before.

ORDER DIRECT FROM THESE PRICES:

1-pound package, $2.00 each; 10 or more, $1.75 each.
2-pound package, $3.50 each; 10 or more, $3.00 each
3-pound package, $4.50 each; 10 or more, $4.00 each
1 untested queen, $1.00; 25 or more, 90c each
1 select untested queen, $1.25; 25 or more $1.00 each
1 select tested queen, $2.50; 25 or more, $2.00 each
Breeders, extra select and tested for breeding, $5 to $10

Add price of queen when ordering packages. Orders booked with 10 per cent deposit, balance before delivery.
Write for prices in large lots. No order too large—No order too small.
References by permission: Security State Bank, San Jose. First National Bank, Chico, Calif. Bank of Cottonwood. Cottonwood, Calif.

J. E. WING, 155 SCHIELE AVE., SAN JOSE, CALIF.

SUPERIOR ITALIAN BEES

Two-pound packages with queen ------$4.50 each
Ten or more ---------- 4.00 each
Three-frame nucleus ---------- 5.50 each
Ten or more ---------- 5.00 each

CYPRESS BEE SUPPLIES

White pine Hoffman frames—
Regular-------$23.00 for 500; $45.00 per 1,000
Shallow ------$16.50 for 500; $32.00 per 1,000
Dovetailed cypress hive bodies --$70.00 per 100

THE STOVER APIARIES
MAYHEW, MISS.

BURR COMBS

By L. C. Dadant.

Each morning as I take the children to school, the factory road leads us for over half a mile through our own property, alongside a stretch of orchard, down through a winding, wooded valley and up past more orchard, a vineyard, sweet clover field, and on to the public highway.

The orchard was planted in 1906, and this past fall our first real crop of apples and pears was harvested. True enough, we have had fair crops of apples for several years, but as most of the trees are Jonathan, their development has seemed everlastingly slow. Just think of it—seventeen years of nursing before securing returns worth while.

What a difference between the Illinois orchardist and the beekeeper who buys his hives on April first, puts his package of bees in them on May 1 and harvests his honey crop in September, or sometimes as early as August. Even if his colonies should only build up to full strength the first year, he can expect a full crop the second season. True enough, the orchard is now ready, after seventeen years of growth, to bear for twenty or perhaps thirty years, but that first long wait was a "corker." And as to care and investment needed, the orchard hasn't any advantage over the apiary, what with land at $125.00 to $200.00 per acre, with taxes high and interest at six and seven per cent, with planting and spraying, and pruning and spraying, and cultivating and spraying, and spraying again and again, harvesting and basketing, and icing and selling—selling quick before the fruit spoils.

Believe me, I'll keep bees and sell honey at my leisure. The only point the orchard has it over the apiary is that it doesn't winterkill and it doesn't sting. Still we felt that we had been stung until we harvested that crop in the seventeenth year.

When it comes to selling fruit it is the same as with honey. Good, sound fruit, carefully graded and packed, commands the price. Such apples as Stark Delicious retailed at the orchard for $2.50 per bushel; Jonathan and Grimes Golden at $2.00, other inferior kinds at a little less. Local fruit growers were selling in some instances for 50 per cent less than we received. Their fruit, however, was not sprayed or graded, and totally inferior. It is the same thing in honey, and in fact everything else produced. It pays to produce with care, grade accurately and pack carefully.

And pears—Kieffers, the "Cannonball type," sold high in the right market. A car consigned to Chicago brought a net of only 53 cents per bushel, while two cars to northern points where this kind of fruit is scarce and in demand sold for 91 cents net, or more than 70 per cent increase over the Chicago price. It surely does pay to investigate the market before deciding where to ship your honey or your fruit.

We're still pretty well supplied with apples, and every one of the Dadant "kids" can have "an apple a day," or two of them if they like. By the way, do you eat your baked apples with honey? That surely makes them good. Then if the wife drops in a few chopped nut meats it makes them all the more delicious.

The old wine cellar, built many years ago when Grandfather Dadant grew grapes, has proved to be a great place to keep our fruit. The old barrels and casks have long since been replaced by bins and slatted boxes, and if necessary we can store several thousand bushels with but little labor. The cellar is deep and cool and the fruit keeps well. This year several bushels of Jonathan apples have been wrapped in paper, and, although it is now January 15, these apples are crisp and sound. Some of the other varieties, such as Ben Davis and Winesap, sometimes keep until May and June, until it's nearly time for the new crop of Early Transparent.

Our bee cellar under the old home, where I live with my family, has a furnace and is entirely too warm for wintering bees. It is so warm, in fact, that what comb honey we have is kept there safe from granulation.

This fall Cale and Watt found that they had a number of nuclei that they wanted to cellar winter. They concluded to try out the old wine cellar and have put in something like twenty nuclei for a test. There is no doubt that as far as ventilation and quiet and dark are concerned they are perfectly safe.

It's cool, too; in fact I am afraid too cool. We have already had a temperature of 19 below zero and are likely to have a lot more cold weather. Unless artificial heat is used, there is, in my opinion, danger of the temperature dropping too low.

I'd be willing to make a small wager as to the outcome, especially if that cold weather comes on. However, my experience with cellar wintering has been limited to one or two seasons, so I'll keep quiet; then the others can't say "I told you so." We'll see, however, just what happens by spring.

Beeswax—Looking Ahead

Every little while Swanson comes into the office with a cake of beeswax for inspection and test—a cake that does not look just exactly right to him. Sometimes, too, the cake proves to be impure—someone has adulterated it. That cake or shipment is utterly spoiled for us and has to be returned to the shipper. Once mixed, it is impossible to separate beeswax from the adulterant. We are glad to say that very rarely in the past have we received adulterated beeswax or wax mixtures from the beekeeper.

Every cake of beeswax we receive, whether it is a small shipment of a few pounds or a shipment of a ton or more, has to go through our inspector's hands. Every suspicious looking cake or lot has to pass our tests before being accepted.

You may wonder why we are so particular. The largest part of the beeswax received here is, of course, made into comb foundation. Everyone will agree that pure beeswax suits the bees better than anything else. It behooves us, therefore, to be extra careful and not let anything get into our foundation that may be in the least way objectionable to these delicately particular workers. Then, too, next to honey, beeswax is the most valuable product that the beekeeper has, isn't it? If the foundation we furnish him is made of pure beeswax, he can at any time render his combs and honestly sell that wax so rendered, to us or to others, as **Pure Beeswax.** In other words, **our guarantee is his guarantee.**

Not long ago we had an inquiry from a certain polish manufacturer for 10,000 pounds of absolutely pure beeswax. Besides asking for our price, he wrote a special letter laying stress on the importance of the beeswax being **pure.** As we buy and use only pure beeswax, we were able to quote him on what he wanted. But supposing we had not been careful? We couldn't have offered him pure beeswax, and would have had to tell him that our beeswax contained a small percentage of something else, that it was not pure. That would mean that the polish manufacturers and other allied trades, who actually consume 50 per cent or more of the beeswax produced in this country, would use something other than U. S. A. beeswax, probably Chilean or Brazilian or Mexican, or something else. The price on these waxes would go up—ours would go down. Isn't it worth while for us to watch the "purity of our product?"

Speaking of Hunting

The duck season is over—much to my regret and very much to the relief of Cale, Pellett and Swanson. They're the only ones in our organization who have not been bitten by the "bug." But never mind—I've a good friend down in the country and he has said to me, "Be ready—the first mild evening we'll have a coon hunt."

Lucky, isn't it, that coon hunting is done at night. I can slip away after dark and be back before daylight, and they'll never know the "boss" has been gone.

"The Lumber That Lasts" **FOR** Bee Hives Hive Bottoms Hive Stands

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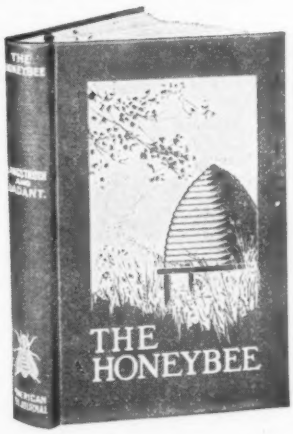

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This book, from the pens of three of the world's master beekeepers—Langstroth, Charles Dadant and C. P. Dadant—is a classic, containing not only the lifelong experiences of these most practical beekeepers but also the most authoritative information on every phase of beekeeping.

Since Langstroth entrusted his book to the Dadant's, it has been revised several times and is now in its twenty-second edition. It still retains all the important teachings of Langstroth, however, whose principles and discoveries form the basis of modern beekeeping.

"The Honeybee" is used by many schools and colleges as a text book, and it is especially valuable because every subject is so cross-indexed that all the matter pertaining to it can be found with great ease.

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NON-SAGGING
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NO GNAWING AROUND WIRES
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MAKES PERMANENT PERFECT COMB

"Full sheets can be put in frames as rapidly as any other foundation, because, on account of the tough center ply, it does not have to be fastened to the top bars."

"I used 200 pounds of Three-ply foundation, putting it all in frames. Here are the big things that I like about it:

"First, it can be put in frames quickly and easily.

"It makes perfect combs. Absolutely no buckling. There was considerable gnawing about wires in other foundation which I used, due to the poor season. But let me tell you that there was less gnawing on the Three-ply than any foundation I used, or any foundation I saw used in my locality."

NOAH WILLIAMSON, Bronson, Iowa.

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Write for Booklet, "Three Ply Airco Foundation"

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